RAILWAY AGE

THE STANDARD RAILROAD WEEKLY FOR ALMOST A CENTURY

A.A.R. Mechanical Division
Convention Proceedings Number

JULY 9, 1951

UNIVERSITY OF MICHIGAN
JUL 13 1951
TRANSPORTATION LIBRARY

Schedules of through freight trains on the 476-mile Minneapolis-Peoria run of the Minneapolis & St. Louis Railway were reduced from 30 hours with steam to under 18 hours with General Motors Diesels—permitting deliveries and connections which save up to 24 hours in transit time. Handling 75% of the M. & St. L. freight traffic, GM Diesels are pulling 21% more ton-miles per train than steam and are showing a 37% saving, based on total cost per train-mile.

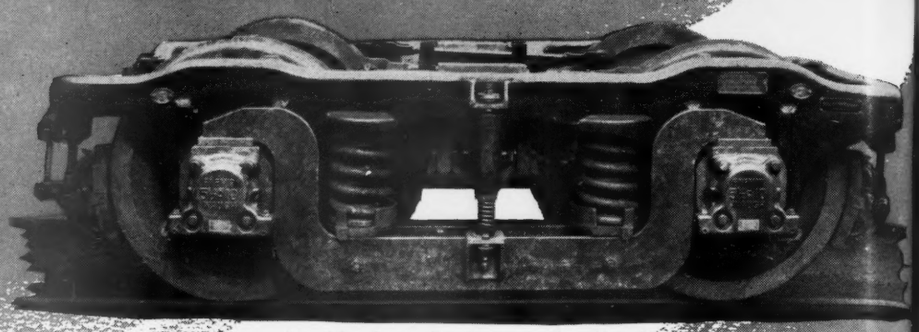
ELECTRO-MOTIVE DIVISION

GENERAL MOTORS • LA GRANGE, ILLINOIS
HOME OF THE DIESEL LOCOMOTIVE

In Canada: GENERAL MOTORS DIESEL, LTD., LONDON ONTARIO

GENERAL MOTORS LOCOMOTIVES

It's New!



Arranged with clasp brakes and roller bearings

COMMONWEALTH BOX-EXPRESS CAR TRUCK

Provides Smooth Riding
Protects Car Contents
Reduces Damage Claims

Especially designed to meet the demand for a practical, rugged light-weight truck for Box-Express Cars operating in passenger train service, this newest type **COMMONWEALTH** Equalized Swing-Motion Truck provides a smoother riding car, protects car contents, and greatly reduces upkeep costs.

The swing bolster arrangement permits effective lateral control, assuring smoother riding with less shock and damage to car contents, car body and track structure.

The one-piece cast steel truck frame has integral pedestals, machined to maintain the axles in tram at all times, which is essential whether plain or roller bearings are used.

COMMONWEALTH BX Trucks are arranged for either clasp or single shoe type brakes.

For dependability and real economy, it will pay you to apply **COMMONWEALTH** BX Trucks to *your* express, refrigerator and merchandise cars in passenger train service.

Pennsylvania Railroad 60-foot Long
Box-Express Car with Commonwealth BX Trucks

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. • EDDYSTONE, PA.

Vol. 131 No. 2 July 9, 1951

RAILWAY AGE

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office and Trade Mark Office in Canada.

Simmons-Boardman Publishing Corporation: James G. Lyne, President. Samuel O. Dunn, Chairman Emeritus. J. S. Crane, Vice-President and Secretary. C. Miles Burpee, Harry H. Melville, C. W. Merriken, John R. Thompson, William H. Schmidt, Jr., Vice-Presidents. Robert G. Lewis, Assistant to President. Arthur J. McGinnis, Treasurer. Ralph E. Westerman, Assistant Treasurer.

EDITOR ..... James G. Lyne
EDITORIAL CONSULTANT ..... Samuel O. Dunn
MANAGING EDITOR ..... C. B. Tavenner
WESTERN EDITOR ..... William H. Schmidt, Jr.
NEWS & FINANCIAL EDITOR .... Gardner C. Hudson
WASHINGTON OFFICE . . .
Walter J. Taft Joe W. Kizzia
TRAFFIC & TRANSPORTATION DEPARTMENT . . . .
Robert G. Lewis John W. Milliken
John S. Gallagher, Jr.
MECHANICAL DEPARTMENT . . .
C. B. Peck E. L. Woodward
H. C. Wilcox C. L. Combes G. J. Weihofen
ELECTRICAL DEPARTMENT ..... Alfred G. Oehler
ENGINEERING DEPARTMENT . . .
M. H. Dick Henry E. Michael
Norris V. Engman Radford E. Dove
PURCHASES & EQUIPMENT ..... Fred C. Miles
SIGNALING & COMMUNICATIONS DEPARTMENT . . .
John H. Dunn Maurice Peacock
WESTERN NEWS DEPARTMENT ... Arthur M. Cox, Jr.
ASSOCIATE EDITOR ..... Charles Layng
LIBRARIAN ..... Edith C. Stone
EDITORIAL ASSISTANT ..... Elaine C. Farrar

Published weekly by the Simmons-Boardman Publishing Corporation at Orange, Conn., and entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price, $3.00 a year to the railroad industry in U. S., U. S. possessions and Canada, payable in advance and postage free. Subscription price to the railroad industry elsewhere in the Western Hemisphere, $10.00 a year; in other countries, $15.00 a year. Two-year subscriptions double the one-year rate. Single copies 50¢, except special issues $1. Address Robert G. Lewis, Assistant to President, 30 Church Street, New York 7.

Editorial and Executive Offices at 30 Church Street, New York 7, N. Y., and 79 West Monroe Street, Chicago 3, Ill. Washington 4, D. C.: 1081 National Press Building—Cleveland 13: Terminal Tower—Portland 5, Ore.: Terminal Sales Building—Los Angeles 17: 816 West Fifth Street—San Francisco 4: 1204 Russ Building—Dallas 4: 2909 Maple Avenue.

IN THIS ISSUE

EDITORIAL COMMENT:

Quit Now, Mr. Knudson? 63
Meetings Can Be Made Interesting 64

GENERAL ARTICLES:

How Modern Communications Systems Expedite Operations at Toledo 70
Two-Way "Snow Consumer" Developed 72
Private Planes . . . Will They Have a Place in Railroad Operation and Maintenance? by Charles J. Miller 74
How Railroad "Y"s Generate "Faith for the Future" 78
Old Mechanical Problems Still Acute 81

NEWS FEATURES:

3rd Quarter Loadings Seen Up 2.7 Per Cent 65
N. H. Affairs Aired Before Senate Group 65
A New Railroad Comes to Life 66
1951 Net Income Hits $197 Million 68
Senate Committee Minority Raps Wage Dispute Report 110
N.P.A. Sets Up M.R.O. Plan for Railroads 112
Meet Another Centenarian!—The Missouri Pacific 114

DEPARTMENTS:

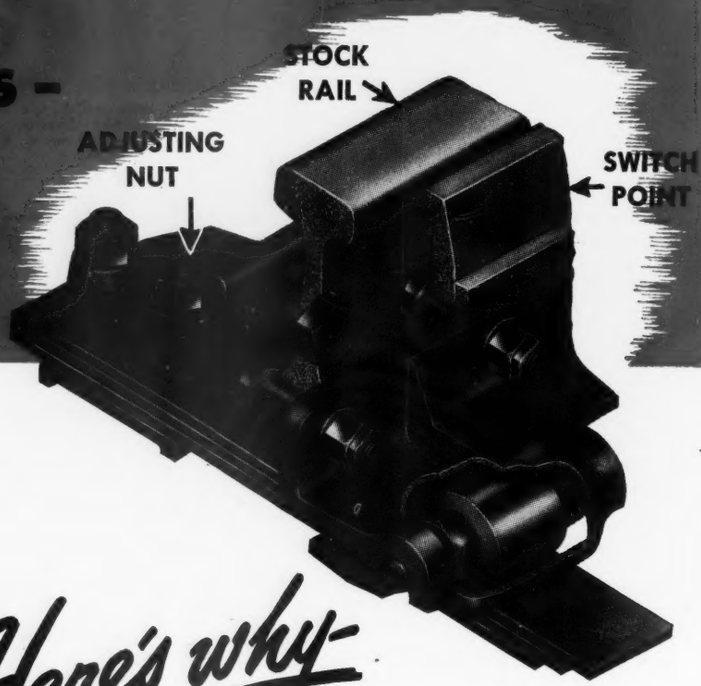
News of the Railroad World 65
Communications 77
Operating Revenues and Expenses 130

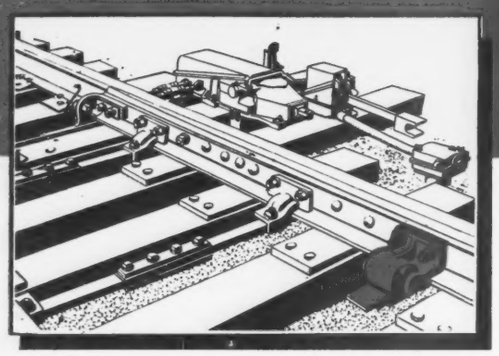
Published by SIMMONS-BOARDMAN PUBLISHING CORPORATION, New York 7

Railway Age Railway Mechanical & Electrical Engineer Railway Engineering & Maintenance
Railway Signaling & Communications Car Builders' Cyclopedia Locomotive Cyclopedia
Railway Engineering & Maintenance Cyclopedia American Builder
Marine Engineering & Shipping Review Marine Catalog & Buyers' Directory
Books covering transportation and building

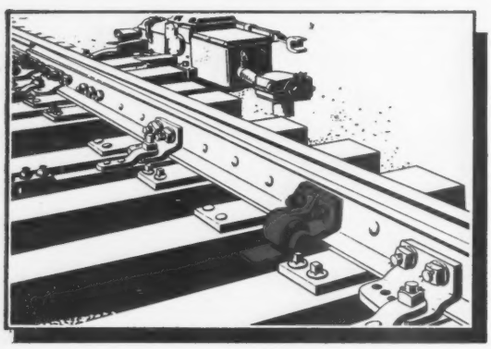
Railway Age is a member of Associated Business Publications (A. B. P.) and Audit Bureau of Circulation (A. B. C.) and is indexed by the Industrial Arts Index and by the Engineering Index Service. Printed in U. S. A.

Install "UNION" Roller Bearings On Your Switch Points -

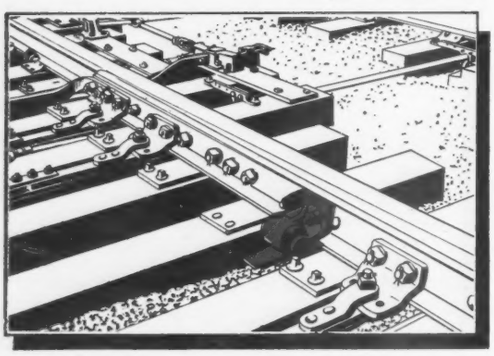




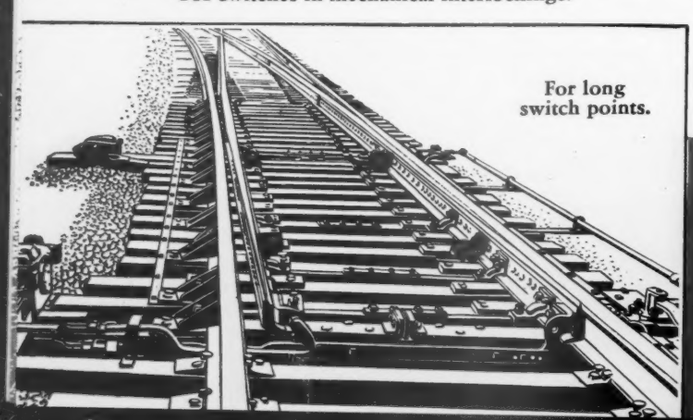
For hand-operated switches, spring switches, and spring switches equipped with mechanical facing point locks.



For power switches.



For switches in mechanical interlockings.



For long switch points.

Here's why

1. They carry approximately 80 per cent of the weight of the switch points in transit . . . greatly reduce the power required to throw the switch.

2. Save wear on connections and operating mechanism . . . lessen maintenance time required for oiling and cleaning switches.

3. Assure easier operation of long, heavy switch points and minimize frictional interference at locations where sand or dirt collects on the switch plates.

4. Improve operation of spring switches by reducing friction when points return to normal after a trailing move.

5. Aid in restoring spring switch points equipped with Mechanical Facing Point Locks to proper relationship with stock rail—at point where lock connection is made.

"Union" Roller Bearings are attached to the stock rails and support the switch points from these rails . . . function properly despite varying tie alignment. They are mounted above the ballast—and do not interfere with tamping of ties. For full details, call or write our nearest district office.

UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PENNSYLVANIA

NEW YORK · CHICAGO · ST. LOUIS · SAN FRANCISCO

WEEK AT A GLANCE

CURRENT RAILWAY STATISTICS

Operating revenues, five months	
1951	$ 4,180,123,254
1950	3,444,524,886
Operating expenses, five months	
1951	$ 3,297,621,471
1950	2,765,378,614
Taxes, five months	
1951	$ 476,980,422
1950	353,765,743
Net railway operating income, five months	
1951	$ 321,485,648
1950	253,110,891
Net income, estimated, five months	
1951	$ 197,000,000
1950	133,000,000
Average price railroad stocks	
July 3, 1951	49.50
July 3, 1950	50.08
Car loadings, revenue freight	
25 weeks, 1951	19,095,789
25 weeks, 1950	17,101,230
Average daily freight car surplus	
Week ended June 23, 1951	23,377
Week ended June 24, 1950	3,918
Average daily freight car shortage	
Week ended June 23, 1951	9,577
Week ended June 24, 1951	16,887
Freight cars delivered	
May 1951	9,774
May 1950	2,193
Freight cars on order	
June 1, 1951	150,628
June 1, 1950	42,300
Freight cars held for repairs	
June 1, 1951	94,038
June 1, 1950	133,936
Average freight car turn-around time, days	
May, 1951	14.78
May, 1950	15.34
Average number railroad employees	
Mid-May 1951	1,291,172
Mid-May 1950	1,135,064

In This Issue . . .

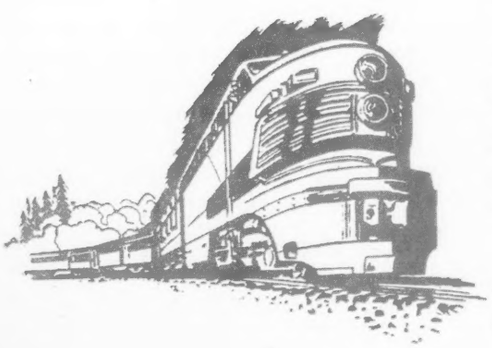
MECHANICAL AFFAIRS: The bulk of this issue is devoted to a detailed report, beginning on page 81, of the proceedings of the 1951 meeting, just concluded, of the Mechanical Division of the A.A.R. Twenty-three pages, altogether, are devoted to division activities and to abstracts of committee reports.

THE LAST WORD—in up-to-the-minute railroad communications facilities can be found in the N.Y.C.'s new Central Union Terminal at Toledo. The extensive installation, which includes new telegraph and train dispatcher's offices, and public address, loudspeaker, Teletype and interoffice communications systems, is described on pages 70 and 71.

NEWS HIGHLIGHTS: Canadian railroads get 12 per cent interim rate increase, to yield $54 million a year.—Terminal Railroad Association to build new $3-million mail handling facility.—Army buys 418 box cars from Pullman; New Haven 15 diesels from Alco-G. E.—Rock Island to build new yard at Council Bluffs.—Missouri Historical Society celebrates hundredth anniversary of first construction on Pacific Railroad, predecessor of present Missouri Pacific.

WANT TO KEEP COOL? Read the page 72 description of the new Bros "snow eater" tried out last winter on the Canadian Pacific. Sure, it's unseasonable weather for snow plows right now, but they'll be in demand again before so very many months have elapsed.

USES FOR A COMPETITOR: There may be — no, there is — severe (and largely unfair) competition between railroads on the one hand and airplanes on the other for passenger business and, to a lesser — but increasing — extent, for express and even for freight. But just as some types of motor trucks have proved to be useful tools for certain kinds of railroad work, so some types of planes may be usefully employed for certain specialized railroad tasks. Beginning on page 74, Charles J. Miller, assistant roadmaster of the Western Pacific, outlines his own views as to some possible uses for private planes in railway operation and maintenance; while up in the wilds of Labrador, the Quebec, North Shore & Labrador is expediting its own construction by "airlifting" heavy machinery into otherwise inaccessible working bases. (Pages 66 and 67.)



FOR BETTER UNDERSTANDING: One of the biggest, and potentially most valuable, tasks that can be performed by the Railroad Y.M.C.A.

WEEK AT A GLANCE

is to bring about "better understanding between labor and management." In one form or another, this challenge was presented to a national "Y" assembly in Cleveland late last month by a number of speakers, including Paul W. Johnston, George M. Harrison and L. W. Horning. Their remarks, and other features of the gathering, are summarized in the article which starts on page 78.

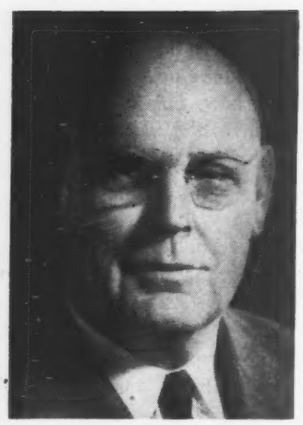
In Washington . . .

MINORITY RAPS MAJORITY: "Lack of objectivity," "indefensibly oversimplified," and "superficial" were only some of the politely uncomplimentary adjectives applied by a minority of the Senate Committee on Labor and Public Welfare to the committee's majority report contending that government seizure "favors the railroads" in wage disputes. The minority's views are set forth in some detail in the news pages.

ACTION DEFERRED: A.A.R. directors, meeting at Washington on June 29, deferred for the second time action on the report of the so-called Committee of Nine, which has been investigating activities in the field of loss and damage to freight. Reason for the deferral is given in our news account of the meeting.

WASHINGTON BRIEFS: Shippers' Boards predict 2.7 increase in third-quarter car loadings.—Net income for five months of 1951 reaches $197 million.—Army buys two Unicel box cars.—Five railroad men on U. S. C. of C.'s Transportation Committee.—N.P.A. sets up M.R.O. plan for railroads.—Senate committee opens investigation of N.Y.N.H. & H.

HIGH FLYING: Mail pay received by "local service" air lines averaged $25.76 per mail ton-mile in this year's first quarter, according to figures compiled by the Air Transport Association of America. Meanwhile, the same lines had express receipts averaging only 35.07 cents per ton-mile and freight receipts averaging 30.63 cents.



B. M. BROWN, general superintendent of motive power of the Southern Pacific, who is beginning the second half of his two-year term as chairman of the Mechanical Division of the A.A.R. A complete report of the proceedings of the division's recent annual meeting at Chicago begins on page 81

. . . And Elsewhere

NEW NOTES: New notes for shippers' advisory board proceedings were sounded at the June 21 meeting of the Southeast board in Atlanta, Ga. Talks were made there by these representatives of highway, water and air transportation: F. G. Freund, American Trucking Associations; H. V. Greenslit, Teche Greyhound Lines; L. A. Parish, Pan-Atlantic Steamship Corporation; and J. G. Erwin, Air Cargo, Inc. They appeared under the auspices of a special board committee, chairmaned by Alvin W. Vogtle, which is studying proposals for expanding the board's program to include liaison arrangements with transport agencies in addition to railroads.

SUNDAY TRAINS: A New Jersey supreme court advisory committee has recommended legislative repeal of that state's "blue laws," which, among other things, prohibit railroads from running more than one train on Sundays.

QUIT NOW, MR. KNUDSON?

A new "party line" has attained some currency among traffic people. The burden of its specious argument is that, in the interest of a "strong national front," there be imposed a kind of Roman peace upon the several forms of transportation. They are advised to cease the struggle to gain public sympathy for their rival claims and are admonished to live quietly together. In the case of the railroads, at least, the idea seems to be that the brother in the family who supports Mom and Pop—and pays not only his own full board but, also, part of that of his non-contributing relatives—ought to quit complaining. Instead, he is called upon to smile pleasantly while his free-riding and well-fed kinfolks raid the icebox faster than he can fill it.

Newest Voice in the Chorus

The latest voice to join the "peace, it's wonderful" chorus is D.T.A.Administrator Knudson. In recent talks about the country he has attacked what he calls public "recriminations, charges, countercharges, name-calling and antagonisms." One gets the impression that the administrator thinks the issues involved are pretty insignificant. Last month at Buffalo, he called the rivalry "harmless" in normal times—a means by which "the antagonists vent their feelings and air their gripes." But he doubts whether, in the current emergency, the country can achieve a "high level of cooperative endeavor" in "an environment of acrimony." This paper must disagree both with Mr. Knudson's estimate of the relative harmlessness of the "rivalry" and with his prescription for a "moratorium" on talking about it.

To back his argument, Mr. Knudson has praised the advertising of the individual automobile manufacturers because each "plays up the superior qualities of his own product without accusing a competitor of doing inferior work or enjoying unfair advantages." With the possible exception of Mr. Kaiser's remarkable access to government credit, no auto manufacturer does enjoy, or ever has enjoyed, unfair advantage over his competitors as a result of public policies. If one of them should happen to have a plant built and maintained from general taxation or should obtain a grant from the Post Office enabling him to use public buildings for displays, a quick and dramatic change in the tone of the industry's institutional advertising copy is not difficult to imagine.

The railroads' "antagonisms vented on the air and in the public press" decidedly do not belittle the products of their competitors. They criticize public policies. (The same, unfortunately, cannot be said for the misleading advertising of some other transportation agencies.) The railroads' purpose is to open the eyes of the public to the hidden costs of transportation—meaning outpourings of precious men and materials—which do not show up on the books or in the prices charged by their competitors.

Need for Efficient Use

A country at war has the duty to use its resources with utmost efficiency. It must ferret out waste and eliminate it. The fact is that Administrator Knudson is ringmaster over a segment of the economy which is semi-socialized. The socialized part is becoming larger every day—both absolutely and relatively. Furthermore, under the pre-

tense of "preparedness," the proponents of further socialization are more insistent and more vocal than ever before. Witness, for example, the number of business and "civic organizations" which are joining the chorus for the fatuous St. Lawrence Seaway project. Witness the giant state truckers' lobbies—abetted by a few short-sighted shippers—which wield unremitting pressure for greater concessions in the use of public highways, so that, by the sleight-of-hand of "sharing" road costs, further artificiality in relative costs of commercial highway use can be achieved and more traffic diverted to the crowded highways. Witness, indeed, the administrator's own recent exercise of influence in behalf of relaxing, for the emergency, even present generous limitations on sizes and weights of vehicles imposed by the states.

Policy Flaws Not "Harmless"

The flaws in the transportation dispensation about which the railroads are seeking to educate the public are not "harmless." Their fight on these flaws is not a childish exhibition of egoism—as the administrator appears to think. The issue is the valid and vital one of the economical use of the nation's limited resources of labor and materials.

Freight and passengers continue to flow in response to preferences in price—as well as in service. Even in the present emergency, the armed forces themselves are the most avid among all the bargain-hunters, playing carrier against carrier in that rough-and-tumble game known as "Section 22 quotations."

As long as this is so, the de-socialization of transportation prices, by assessing full costs where they belong, is the only possible means of getting efficient use of the country's resources. The railroads are safeguarding the public interest in such complaining as they have done. If they are to be criticized, it should be for not complaining loud and often enough—not against the product offered by their rivals, but against the public policies which put a deceptive price on that product.

U. S. Secretary of Commerce Sawyer doesn't think that the injustice about which the railroads are hollering is "harmless." A year ago he said publicly:

> "Today all forms of domestic transportation, except railroads and pipelines, receive government help . . . The grand total of federal expenditures for transportation in the fiscal year ending this June 30 amounts to $1.5 billion . . .
>
> "It is our policy that no competitor, or class of competitors, should have special privileges or undue advantages . . . Federal actions, certainly, do result in some inequality of treatment of the various forms of transportation. The great difficulty with giving federal funds is to know when to stop."

That's what the railroads have been saying all the time, Mr. Knudson. This is no time for them to quit talking—or for you, to whom the national welfare is a primary obligation, to advise them to do so. We don't question your sincerity—but we do suspect that you have talked publicly on this subject without thinking long enough or hard enough to lay hold of the fundamental issues involved.

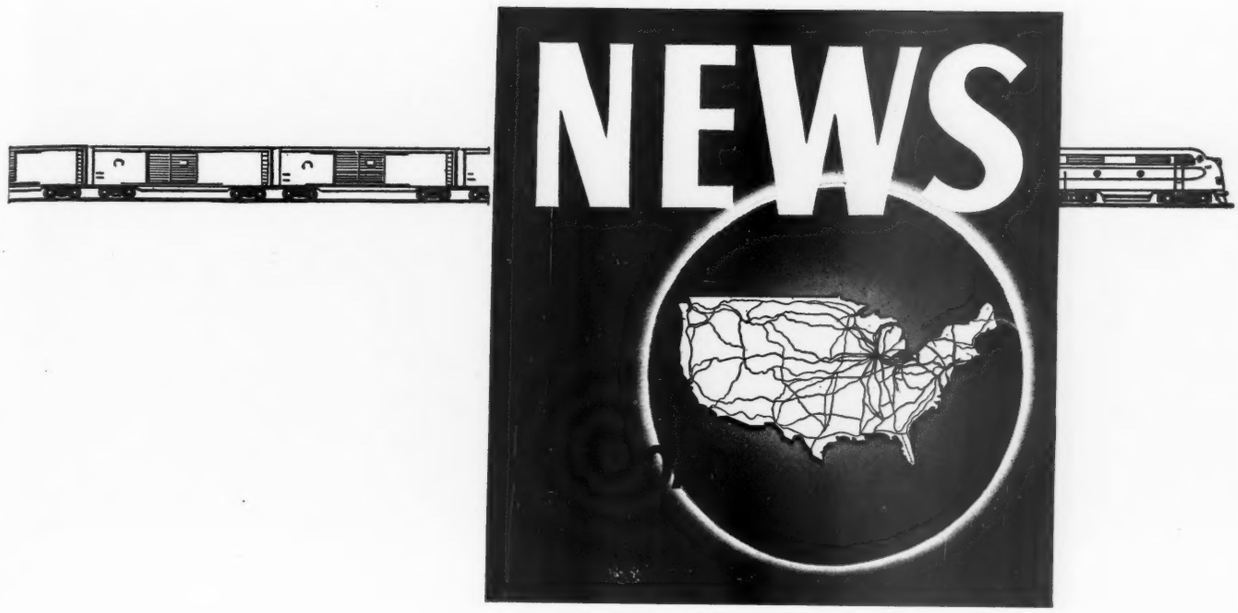
MEETINGS CAN BE MADE INTERESTING

At the opening session of the meeting of the Mechanical Division of the Association of American Railroads, held at the Congress Hotel, Chicago, June 26-28, it was announced that the division proposed to change the method of presenting reports to the meeting. Heretofore it has been customary to read each report verbatim. Hereafter the much briefer and far more interesting oral presentation will cover only the high spots which are most likely to provoke discussion. To be practicable, such a plan implies that copies of the reports shall have been distributed to the members sufficiently in advance of the meeting so that they may be studied beforehand. That has long been the practice of the Mechanical Division—hence need for verbatim presentation seldom arises.

Such a method of presentation has many advantages. Probably of greatest importance is the saving of time, which can much more usefully be devoted to discussion than to reading again what should already have been read by the members interested in the subject. The success of the work of an organization like the Mechanical Division does not depend primarily upon having interesting meetings. It is equally true, however, that interesting meetings add definitely to the tone of an organization and on that account alone are well worth striving for. In the work of any committee there are background incidents, and differences of viewpoint which a chairman can bring out before the meeting, that add greatly to the understanding of the formal report. Such supplementary information has a definite tendency to stimulate discussion.

To imply that all reports have always been read verbatim before these meetings is to misrepresent the facts. There have been a few committee chairmen who of their own volition have departed from the text to illuminate the subjects of their committee's reports, and to add significantly to the effect by the force of their own personalities.

The announcement that the shorter and more interesting method of presentation is to be the norm hereafter does not mean that its full effect will be immediate. The qualifications of an ideal committee chairman are many. First is his ability as an organizer. Second is his understanding of all aspects of the committee assignment. Third is his ability to follow through with the formulation of a conclusive report. A man with all of these qualities may be deficient in the ability to "put over" his report interestingly before an audience. There are probably few men, however, if they once recognize the value of good persuasive presentation before the meeting, who cannot improve on the deadening monotony of reading page after page of printed matter. It will take time to bring about this recognition, but the accomplishment will be well worth the effort.



3rd Quarter Loadings Seen Up 2.7 Per Cent

Shippers boards predict rise in 22 of 32 commodity groups

Freight car loadings in the third quarter of 1951 are expected to be 2.7 per cent above those in the same period in 1950, according to estimates of the 13 regional Shippers Advisory Boards.

On the basis of those estimates, loadings of the 32 principal commodity groups will be 8,490,233 cars in the third quarter of 1951, compared with 8,263,691 actual car loadings for the same commodities in the corresponding period of the preceding year. All boards, except three (Ohio Valley, Trans-Missouri-Kansas and Southwest) estimate an increase for the third quarter of 1951 compared with the same period in 1950.

The tabulation shows actual loadings for each district in the third quarter of 1950, the estimated carloadings for the third quarter of 1951, and the percentage of increase.

The boards expect an increase in the loading of 22 of the commodities listed and a decrease in 10. Commodities for which increases are estimated and the amount of increase include: Machinery and boilers, 22.5 per cent; citrus fruits, 15.7 per cent; ore and concentrates, 12 per cent; agricultural implements and vehicles other than automobiles, 11.8 per cent; iron and steel, 9.9 per cent; frozen foods, fruits and vegetables, 7.9 per cent; brick and clay products, 7.7 per cent; chemicals and explosives, 7.1 per cent; gravel, sand and stone, 6.9 per cent; grain, 5.7 per cent; fresh vegetables, other than potatoes, 5.5 per cent; livestock, 4.9 per cent; metals other than iron and steel, 4.8 per cent; fresh fruits, other than citrus fruits, 4.6 per cent; lumber and forest products, 3.1 per cent, and fertilizers of all kinds, 3.1 per cent.

Commodities for which decreases are estimated include: Automobiles and trucks, 31.3 per cent; cotton, 24.9 per cent; vehicle parts, 13.2 per cent; cottonseed, soybean-vegetable cake and meal, except oil, 7.9 per cent; potatoes, 7.9 per cent; sugar, syrup and molasses, 5.2 per cent, and coal and coke, 1.1 per cent.

SHIPPERS ADVISORY BOARDS	ACTUAL LOADINGS THIRD QUARTER 1950	ESTIMATED LOADINGS THIRD QUARTER 1951	PERCENT INCREASE
New England	115,801	125,441	8.3
Atlantic States	851,985	864,585	1.5
Allegheny	980,620	1,045,587	6.6
Ohio Valley	1,009,243	960,709	4.8 dec.
Southeast	924,935	955,543	3.1
Great Lakes	707,128	725,852	2.6
Central Western	280,787	298,796	6.4
Mid-West	967,556	980,359	1.3
Northwest	812,589	915,506	12.7
Trans-Missouri-Kansas	409,935	402,865	1.7 dec.
Southwest	506,648	504,704	0.4 dec.
Pacific Coast	414,561	421,624	1.7
Pacific Northwest	279,903	288,662	3.1
TOTAL	8,263,691	8,490,233	2.7

N. H. Affairs Aired Before Senate Group

McMahon committee studies "policies and practices"

Policies and practices of the "Dumaine regime" on the New York, New Haven & Hartford were aired at a public hearing in Washington, D.C., last week. The "Dumaine regime," in control of the road since 1948, is now headed by Frederic C. Dumaine, Jr., who was recently elected to the New Haven presidency as successor to his late father, Frederic C. Dumaine, Sr.

The Washington hearing was held July 2 as part of the investigation into New Haven affairs which is being conducted by the Senate Interstate Commerce Committee's subcommittee on New England Power and Transportation Problems. The subcommittee is headed by Senator McMahon, Democrat of Connecticut, and it launched its inquiry after the Brotherhood of Railroad Trainmen had protested against the discharge of J. Frank Doolan, the road's former executive vice-president —operations. *(Railway Age,* April 2.)

Mr. Doolan is one of some 17 or 18 former officers of the New Haven who have been retired since the Dumaine regime took over; but the plight of the non-operating officers was of no interest to the B.R.T. That's what J. J. Hammill, the brotherhood's general chairman for the New Haven, told the subcommittee. The union, Mr. Hammill said, is not directly concerned with the railroad's financial affairs and other matters within the jurisdiction of non-operating departments involved in most of the other retirements. It was when Mr. Doolan was "cut off" that it "began

A NEW RAILROAD COMES TO LIFE

Working from both ends toward the middle, and from the middle toward both ends, is the 1951 construction program for North America's newest major railroad—the Quebec, North Shore & Labrador, which is being pushed through nearly 360 miles of wilderness to haul iron ore from around Knob Lake, Labrador, to tidewater at Seven Islands, Que. With completion set for 1954, this year's schedule calls for working north from Seven Islands to Mile 75; from Wacouna (Mile 97) south to Mile 90 and north to Mile 125, and from Knob Lake south to Mile 330. Supplies and equipment are being delivered by boat to Seven Islands and "airlifted" to Wacouna and Knob Lake to facilitate work from those points.

The picture at the top of page 66 shows the Wacouna airstrip, as well

---

to hit us," was the way Mr. Hammill put it.

The B.R.T. officer was one of four witnesses heard by the subcommittee, the others having been Eugene Havas, a minority holder of New Haven preferred stock; John L. Hall, member of the Boston, Mass., law firm of Choate, Hall & Stewart, who was formerly a New Haven director; and William B. Snow, Jr., a New Haven director who is also president of the Amoskeag Company, another Dumaine enterprise. Subcommittee Chairman McMahon presided at the hearing. Other senators present were Senator Tobey, Republican of New Hampshire, who is also a member of the subcommittee, and Senator Kem, Republican of Missouri. The latter is a member of the parent committee but not the subcommittee.

Stockholder Havas complained about the New Haven management's failure to pay dividends on the preferred stock which he holds. He claimed that the dividends were being earned, meanwhile asserting that it was impossible to tell what earnings are from the New Haven annual report. That report, according to Mr. Havas, is "a masterpiece of disguise and misinformation," showing "about everything which is not material—not important."

Mr. Havas also discussed a New Haven proposal to purchase some Boston & Providence debenture bonds, most of which were owned by the late Mr. Dumaine, at a price about $1,000,000 in excess of their cost to Mr. Dumaine. The application filed with the Interstate Commerce Commission for approval of that transaction was recently dismissed "without prejudice" at the request of the applicant *(Railway Age* of May 28).

In response to questions from Chairman McMahon, Mr. Havas said he had a "hunch" that announcement of the subcommittee's plan to conduct the investigation caused the New Haven to withdraw the application. Following through along the same line, the chairman noted that Mr. Dumaine, Jr., recently held a press conference to discuss New Haven plans. This action of "talking to the people of New England" was listed as another result of the subcommittee's inquiry.

After Mr. Havas had testified at some length, Senator Kem brought out the fact that the witness held about 600 shares of New Haven preferred, which he could now sell at a profit of about 50 per cent on his original investment, made in the "early 'Forties." When the senator suggested that this was doing "pretty well," Mr. Havas agreed.

Senator Kem then suggested that

as the type of country through which the Q. N. S. & L. is being built. Below is a diesel switcher and part of the railroad's supply stockpile at its Pointe au Basque yards at Seven Islands. On this page, above left, is the present temporary wharf at Seven Islands, which will eventually be converted into ore docks capable of transferring upwards of 10 million tons of iron ore a year from railroad cars to steamers. Above right is an International Harvester Company tractor and matched Bucyrus Erie scraper at work on the new roadbed in the vicinity of Knob Lake. At the right, below, J. C. Martin, assistant to chief engineer of the new railroad, uses a stereopticon to assess some of the aerial photographs which are being used to speed final right-of-way location.

A map of the Q. N. S. & L's route, and a description of some of its anticipated operating features, appeared on pages 79 and 80 of *Railway Age*, November 18, 1950.

Mr. Havas was complaining, not because he had not done well, but because he had not done better. And the witness agreed that this was "an accurate general statement."

Meanwhile, Mr. Havas had conceded that the New Haven management was a good management, and that there was no waste involved in the policy of plowing back earnings into the property. At the same time the witness told Senator Tobey that he preferred what the senator called the "Palmer regime," i.e., the New Haven management headed by former President Howard S. Palmer.

As for Mr. Doolan, Mr. Havas said he did not care whether the former vice-president was "on or off" the New Haven. He explained that when he brought up the Doolan case at a stockholders' meeting, he was merely complying with a newspaperman's request that he ask why Mr. Doolan was "dismissed."

Mr. Havas said he would be "sorry," however, "if they fired Mr. Carmichael," who is G. T. Carmichael, vice-president, secretary and treasurer of the road. Also, Mr. Havas, so he said, "can't help liking the young Mr. Dumaine," whose "smile is worth a million dollars." "It's like F.D.R.'s," Senator Tobey suggested.

Mr. Hall said he became a member of the New Haven's pre-reorganization board of directors in 1932, and he served subsequently as counsel for the reorganization committee. He is still counsel for the road in its undertaking to recover on its investment in the Boston Holding Company, which the Massachusetts legislature required to be organized years ago to take over New Haven holdings of Boston & Maine stock.

Mr. Hall said that he and the late Mr. Dumaine, Sr., did not agree on "certain questions of business ethics." The attorney then went on to express his disapproval of the present New Havan board's refusal to pay to former President Palmer the pension voted by the previous board.

Mr. Hall also discussed the Boston & Providence situation, noting that this road is now being operated for its own account by the New Haven. Already, Mr. Hall said, there are charges totalling some $20 million accrued against the B. & P., for operating deficits. When he was asked who owned the B.&P. stock, Mr. Hall suggested that the committee should undertake to find out. Most of that stock, he explained, is registered in the names of brokers.

Later on, Mr. Snow expressed his disapproval of the arrangement under

A PIONEER GAS-ELECTRIC RAIL CAR (now converted to diesel) received tribute from the leaders of 12 railroad unions when it completed a million miles of service on the Grand Trunk Western between Detroit and Port Huron on May 16. Here Donald Gordon, chairman and president of the parent Canadian National, affixes a plaque to the bright yellow nose of the car with the assistance of Joseph Wilhelm, general chairman of the Brotherhood of Locomotive Engineers. The plaque was presented by all of the labor organizations to mark the performance record of the venerable Electro-Motive car which was first placed in service by the Grand Trunk in 1925. Representatives of the Electro-Motive Division of General Motors Corporation—successors to the old Electro-Motive Engineering Corporation which built the car—also participated in the ceremonies

which the B. & P. is being operated. Even though the situation might benefit the New Haven, of which he is a director, Mr. Snow said it was "not moral." He did not think the I.C.C. ever anticipated that the operation-for-account-of device, which it sanctioned, would go to the point of building for the New Haven a claim that would "defraud" the B. & P. stockholders.

Mr. Snow also discussed the Palmer pension case, defending the action of the present New Haven board. He opposed the Palmer pension as a matter of principle because, he said, it would involve giving the former president special treatment, different from that accorded to the other officers who were retired. The agreement which the present New Haven board has refused to carry out, called for payment to Mr. Palmer of $35,000 a year for life, Mr. Snow said.

When Senator McMahon read into the record a list of former New Haven officers involved in "the decapitations," Mr. Snow said he thought the road had been "overstaffed from an executive standpoint." The former management, he went on, thought it had to have the executive set-up of a "big railroad" to run a property which is really a "big terminal." The director also recalled how the late Mr. Dumaine, Sr., used to calculate that "to fire a $35,000 vice-president was just as good (from the standpoint of saving) as firing 10 men who run trains."

Previous questioning of Mr. Snow had brought out the fact that the Dumaine interests acquired control of a "$400 million railroad" with an investment of about $3 million. The investment is in the road's preferred stock which has the right to elect 2/3 of the board of directors for a five-year period (ending in 1952) following the reorganization.

There was at the hearing some talk to the effect that the Dumaine control would be most easily maintained beyond the five-year period by a policy of withholding dividends on the preferred stock and thus continuing the preferred holders' right to elect a majority of the board. Mr. Snow said that the reorganization plan's provisions with respect to voting procedures after the expiration of the initial five-year period are not entirely clear; and he thinks they will require interpretation by the courts. His own opinion is that the Dumaine interests could not guarantee continuance of their control by withholding the preferred dividends.

The New Haven director also defended the road's policy of selling what it considers surplus real estate. Mounting real estate taxes are such that railroads cannot afford to keep parcels which they do not need, Mr. Snow explained. He added that he considered this a matter to which other roads have not given enough attention.

As to the public relations of the New Haven, Senator McMahon asked Mr. Snow if he agreed that they "have not been of the best." The director replied that "unfortunately, that is true."

B. R. T. Viewpoint

Meanwhile, Mr. Hammill had registered his protest against the discharge of Mr. Doolan. The B.R.T. officer conceded that the present head of the New Haven's operating department—General Manager P. R. Goulett—is a "good man"; but the men, so Mr. Hammill said, are "fearful" that Mr. Goulett "won't be there long." It is a "sad state of affairs," the B.R.T. officer continued, to have officers saying to each other: "Are you still here?"

Mr. Hammill has heard Mr. Doolan called "one of the best operating men in the country." The brotherhood chairman further described the former vice-president as one who could "go out on the line and get things moving," because the men "had confidence in him."

Mr. Hammill also complained that the present New Haven management does not keep facilities in repair. The operating officers "say they can't do much with this bunch," he added. He went on to cite examples, alleging that there had been failures to replace so-called "tell-tales," which warn trainmen of bridges and other low clearances. Also, Mr. Hammill said, there have been instances of delay in repairing catwalks on bridges. Meanwhile, bulletins were issued to warn trainmen to protect themselves at places where the "tell-tales" were missing and the catwalks unrepaired.

Another item in Mr. Hammill's bill of particulars was the taking up of one track of the former double-track line between Providence, R. I., and Worcester, Mass. Here, the B.R.T. officer raised the question of national defense, saying that the Providence-Worcester line was part of the "main route" to Camp Devens at Ayer, Mass.

The men "laugh at" some of the operating officers who have been appointed by the present management, Mr. Hammill continued. At the same time, he conceded that there are "some good operating officers left," and the men "don't want to lose them." The brotherhood chairman again emphasized that his interest was in operating officers only. "They could," he said, "cut off the heads of 10 or 12 elsewhere and the men wouldn't care; but they think firings in the operating department have gone far enough."

When Mr. Hammill listed operating methods and other practices which he considered off the safety beam, Senator McMahon mentioned the New Haven's outstanding safety record. Mr. Hammill's reply was that it had been "the luckiest railroad in the world," having had "many close ones." The B.R.T. officer also said he did not think the road's record as to employee accidents was "very good."

There were many complimentary remarks during the hearing about the New Haven's passenger equipment. Mr. Hammill gave the Palmer regime credit for installing that equipment. Senator Tobey did not agree that all equipment on trains operated over the New Haven is good. He said he has traveled from Washington to New England in Pullman cars that "ought to be assigned to the junk heap."

1951 Net Income Hits $197 Million

Class I railroads in the first five months of 1951 had an estimated net income, after interest and rentals, of $197,000,000, compared with $133,000,000 in the corresponding period of 1950, according to the Bureau of Railway Economics of the Association of American Railroads. The five-months net railway operating income, before interest and rentals, was $321,485,648, compared with $253,110,891.

Estimated results for May showed an estimated net income of $50,000,000, compared with $40,000,000 in the same month last year. Net railway operating income for the 1951 month was $74,936,575, while in May, 1950, it was $67,072,547.

In the 12 months ended with May, the rate of return average 4.5 per cent, compared with 2.86 per cent for the 12 months ended with May, 1950.

Gross in the first five months of 1951 amounted to $4,180,123,254 compared with $3,444,524,886 in the same period of 1950, an increase of 21.4 per cent.

CLASS I RAILROADS — UNITED STATES

	Month of May 1951	1950
Total operating revenues	$ 888,715,928	$ 745,406,420
Total operating expenses	693,802,498	580,566,624
Operating ratio—per cent	78.07	77.89
Taxes	102,888,968	80,705,674
Net railway operating income (Earnings before charges)	74,936,575	67,072,547
Net income, after charges (estimated)	50,000,000	40,000,000
	Five Months Ended May 31, 1951	
Total operating revenues	4,180,123,254	3,444,524,886
Total operating expenses	3,297,621,471	2,765,378,614
Operating ratio—per cent	78.89	80.28
Taxes	476,980,422	353,765,743
Net railway operating income (Earnings before charges)	321,485,648	253,110,891
Net income, after charges (estimated)	197,000,000	133,000,000

Operating expenses amounted to $3,297,621,471 compared with $2,765,378,614, an increase of 19.2 per cent.

Eighteen Class I roads failed to earn interest and rentals in the five months, of which nine were in the Eastern district, one in the Southern region, and eight in the Western district.

Class I roads in the Eastern district in May had an estimated net income of $19,000,000 compared with $13,000,000 in May, 1950. In the five months, their estimated net income was $57,000,000 compared with $46,000,000 in the same period of 1950.

Their net railway operating income in May, amounted to $32,691,412 compared with $25,143,235 in May, 1950. Those same roads in the five months had a net railway operating income of $122,442,232 compared with $108,137,545 in the same period of 1950.

Gross in the Eastern district in the five months totaled $1,863,584,119, an increase of 20.2 per cent compared with the same period of 1950. Operating expenses totaled $1,518,291,903, an increase of 20.1 per cent.

Class I roads in the Southern region in May had an estimated net income of $7,000,000 compared with $8,000,000 in May, 1950. In the five months, their estimated net income was $40,000,000 compared with $36,000,000 in the same period of 1950.

Those same roads in May had a net railway operating income amounting to $10,994,253 compared with $11,726,005 in May, 1950. Their net railway operating income in the five months amounted to $62,199,746 compared with $55,421,831 in the same period of 1950.

Gross in the Southern region in the five months totaled $609,596,727, an increase of 19.2 per cent, compared with the same period of 1950, while operating expenses totaled $465,067,264, an increase of 18.5 per cent.

Class I roads in the Western district in May had an estimated net income of $24,000,000 compared with $19,000,000 in May, 1950. Their estimated net income in the first five months of 1951 was $100,000,000 compared with $51,000,000 in the same period of 1950.

Their net railway operating income in May amounted to $31,250,910 compared with $30,203,307 in May, 1950. Those same roads in the five months of 1951 had a net railway operating income of $136,843,670 compared with $89,551,515 in the same period of 1950.

Gross in the Western district in the five months totaled $1,706,942,408, an increase of 23.5 per cent compared with the same period of 1950, while operating expenses totaled $1,314,262,304, an increase of 18.5 per cent.

MORE NEWS ON PAGE 110

Additional general news appears on page 110, followed by regular news departments, which begin on the following pages:

Organizations 114
Supply Trade 115
Equipment & Supplies 116
Construction 119
Financial 120
Railway Officers 121

Canadian Roads Get 12% Interim Rate Increase

The Canadian Board of Transport Commissioners at Ottawa, Ont., late last week awarded the Canadian railways an interim freight rate increase of 12 per cent, which is estimated to yield the roads increased revenue of $54 million on an annual basis. The railways had applied for added rev-

(Continued on page 110)

TWENTY FORMER GENERAL ELECTRIC engineering and sales experts (left) pose with 20 young company engineers whom they succeeded as "guides" on the firm's "More Power to America Special" exhibit train toward the end of its run. By volunteering for a three-month return to G.E. service, the retired specialists freed their younger counterparts for defense engineering and production assignments. The train was described in *Railway Age* April 29, 1950

General view of "XD" office, showing four telegraph and telephone concentration positions, sending-receiving printer equipment with relay rack-mounted telephone, and telegraph and carrier equipment

How Modern Communications Systems Expedite Operations at Toledo

New York Central's new Central Union Terminal includes very latest in dispatchers' and telegraph offices, public address, Teletype and intercommunication systems

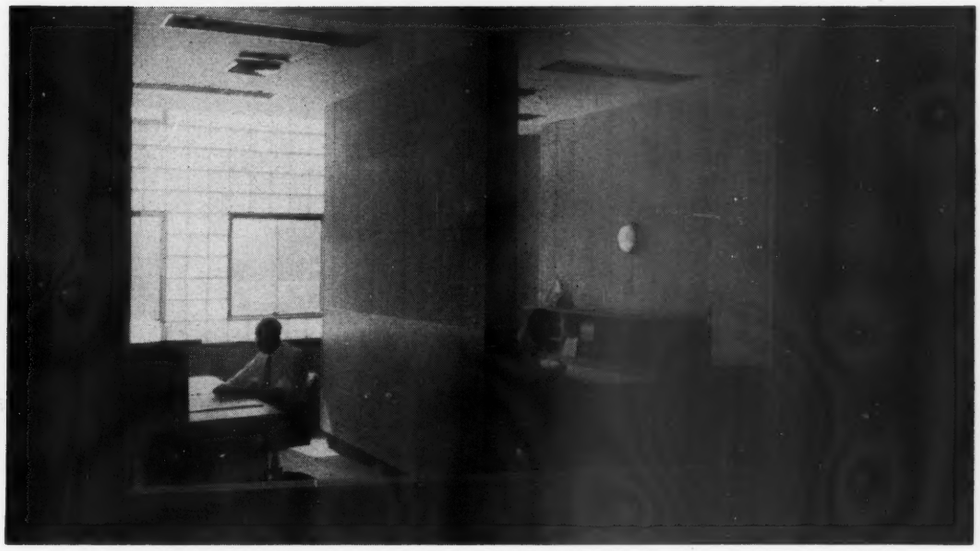
The modern and extensive communications facilities which the New York Central has installed at Toledo, Ohio, are an important part of that road's new Central Union Terminal—which is used also by passenger trains of the Baltimore & Ohio, the Wabash and the Chesapeake & Ohio. These new facilities include new telegraph and train dispatchers' offices, station public address and Teletype systems, as well as two interoffice communication and two loudspeaker systems.

Known as "XD," the new telegraph office is a divisional relay office for the Toledo division of the N. Y. C. This office handles communications which fan west to Chicago, east to Cleveland, north to Detroit, and south to Columbus. Approximately 70,000 printer, telephone and Morse telegraph messages are handled in and out of the office monthly, this volume including N. Y. C., as well as Wabash, B. & O. and C. & O. traffic. In addition, the office is a train order office. The new dispatchers' offices are for the chief dispatcher and the dispatchers for four dispatching districts on the N. Y. C., including: (1) the main line, Toledo to Cleveland; (2) main line, Toledo to Elkhart; (3) "old road," Toledo to Elkhart; and (4) Toledo terminal. Latest design features are incorporated in the architecture of these offices, as well as the new telegraph office.

For announcing the arrival and departure of passenger trains, in addition to paging passengers and making other announcements, there is a station loudspeaker public address system. This includes 28 speakers at strategic points throughout the station—such as the main concourse, waiting rooms, restaurant, barber shop and rest rooms—controlled from a microphone on the train announcer's desk in the concourse.

The local "party-line" Teletype printer circuit keeps employees abreast of the latest developments on train arrivals, departures and other operations. This circuit connects printer machines in: (1) Wabash interlocking tower (east of station); (2) a "puzzle"-switch tender's cabin; (3) east end service building (switch tenders and oilers); (4) the stationmaster's office; (5) train announcer's booth at bulletin board on station concourse; (6) station ticket office; (7) west end service building; and (8) Broadway interlocking tower (west of station). In addition to this Teletype circuit, there is a loudspeaker system known as the Yard 9 circuit, which connects practically all of the same points, for use in quick conversations between those points when Teletype would be too slow.

Serving station platforms and other points in the terminal area, there is a second loudspeaker arrangement,



Portion of acoustically treated dispatchers' office, shown through chief dispatcher's observation window

known as the mail service building system (east end of station), to enable the stationmaster or his assistant to inform mail handlers regarding last minute changes of track assignments with reference to loading and unloading mail from trains. Sixteen speakers are involved in this system.

One intercommunication system is in the new dispatchers' offices, and consists of an individual desk-type unit on each of the four dispatchers' desks, and on the desk of the chief dispatcher, with a speaker microphone on the wire chief's test board in the telegraph office. This system is entirely independent of all other communications, and enables the dispatchers and chief dispatcher to confer with one another regarding train operations without interference.

In addition, there is a second set of intercommunicating equipment between the principal railroad offices throughout the terminal, to enable quick communication and minimize congestion of conventional telephone facilities. The units on this second circuit are in these offices: (1) superintendent; (2) assistant superintendent; (3) chief clerk; (4) assistant chief clerk; (5) secretary; (6) trainmaster; (7) chief dispatcher; (8) stationmaster; (9) car distributor; and (10) file clerk.

Dispatchers on Fourth Floor

The dispatchers for the four N. Y. C. dispatching districts are stationed in a room approximately 33 ft. long by 21 ft. wide, on the fourth floor of the station building, which has a large plate glass picture window opening into the chief dispatcher's office. There are baffle walls, faced with perforated acoustical tile, between each dispatcher's position, to eliminate interference as far as practicable.

Also to minimize the transmission of sound between dispatchers, the entire ceiling is tiled with beveled-edge perforated Fiberglas.

The baffles are fabricated from structural frames from the floor to the ceiling, and covered down to desk height with perforated metal pans, in which are placed insulating blankets of Fiberglas. The room is semi-air conditioned by a unit, which supplies filtered fresh air properly mixed with recirculated room air, making the area independent of natural ventilation. Illumination is provided by fluorescent recessed trouffer fixtures. The new telegraph office is provided with similar ceiling acoustic treatment, identical illumination and semi-air conditioning.

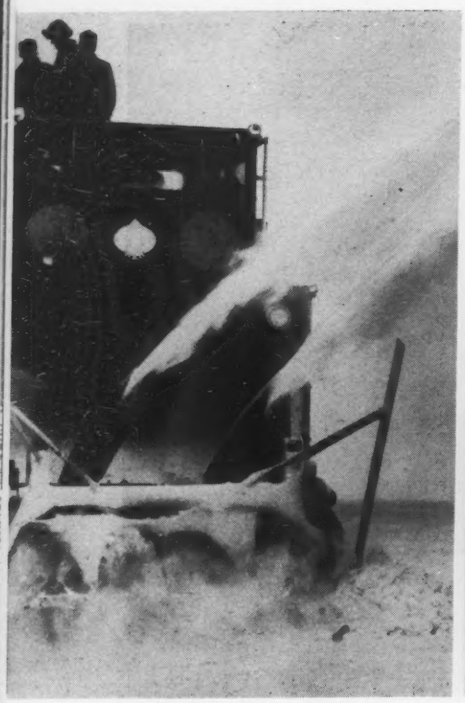
Each dispatcher is provided with a steel desk with special superstructure. In addition to the intercommunication units on his desk, he has a microphone and cabinet-type speaker and amplifier on his telephone circuit. He is thus able to perform his duties without a chest transmitter, and minimum movement is required on his part to talk over the telephone or "intercom" systems.

Telegraph Office

The new "XD" telegraph office is in a room about 36 ft. by 33 ft. on the fourth floor of the station building, and is treated architecturally like the new dispatcher's offices and other parts of the building. It includes four receiving printer positions—one each for Detroit, Chicago and Cleveland, and a spare. Similarly, there are four sending perforator positions for the same points, including a spare. In addition, there are two operators' positions with complete telephone and telegraph concentration equipment.

The office includes five rows of relay rack-mounted communications equipment and a 15-section main distributing frame. Provided are (1) a five section wire chief's test board; (2) a six-section duplex-equipment row; (3) eight-section carrier equipment row; (4) eight-section row for ringing equipment, coils and dispatcher selector equipment; and (5) a four-section row for power-supply equipment.

This new communications project at Toledo was placed in service under the direction of P. S. Hughel, superintendent of communications; F. A. Ahrend, assistant superintendent of communications; and H. N. Wasserman, telephone and telegraph engineer, assisted by A. L. Taylor, assistant engineer. The major items of communications equipment on this project were furnished by: Electronic Communications Equipment Company; Communication Development, Inc.; Western Electric Company; and Teletype Corporation. An article describing in detail the equipment and circuits in this installation was published in the April *Railway Signaling and Communications*.



When the machine is used as a rotary plow the revolving chutes make it possible to cast the snow in any direction or into the melting tank

The melting tank of the combination unit has a capacity of 19,000 gal. For emptying the tank two 16-in. outlets are provided at the bottom on each side

Two-Way "Snow Consumer" Developed

New combination rotary plow and melter has been further perfected after being tested in service on the Canadian Pacific during this past winter

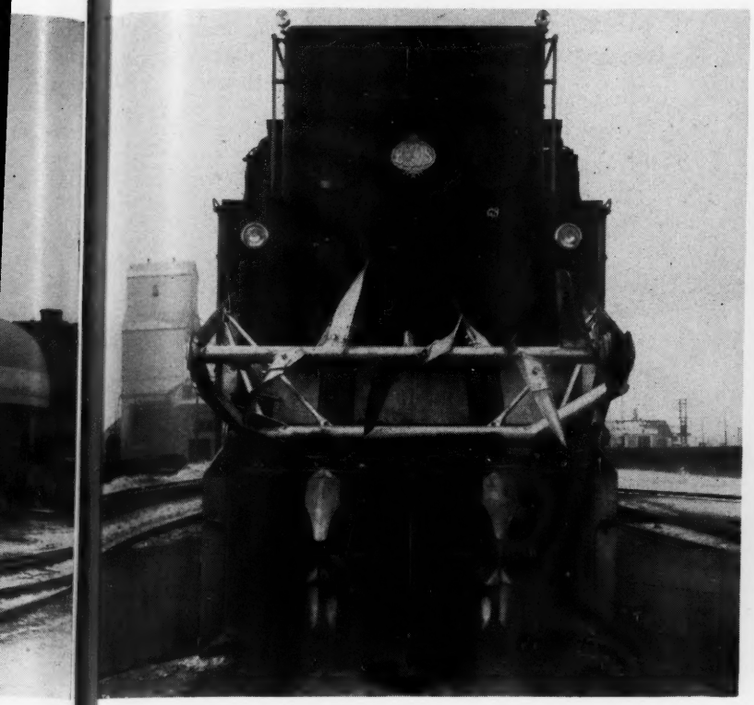
A rotary snow plow designed to "eat" snow under conditions of restricted space, such as exist around yards and terminals, is the answer of the Wm. Bros Boiler & Manufacturing Co. to the railroads' snow-fighting problems. Snow consumed internally by the new machine is melted by "cloudbursts" of hot water and later dumped at a bridge or other suitable location. From the experience gained with the pilot model of the new unit on the Canadian Pacific last winter a number of minor mechanical adjustments have been made in it.

Details of the Plow

The combined rotary snow plow and melter consists essentially of a large steel tank mounted on a flat car which also incorporates, at the forward end, rotary rakes, rotors and chutes for picking up and discharging snow and ice in any direction or into the snow-melting tank. Also mounted at the forward end of the car over the rotary power unit and pump mechanism is the operator's cab. When in operation the unit is pushed by a steam locomotive, which also furnishes steam for heating the water used to melt snow.

The rotary snow plow at the forward end of the machine is similar in design to the Bros Sno-Flyr plow used widely on highway equipment. An essential part of this portion of the equipment is a heavy-duty rotating feeder rake mounted on a horizontal shaft so it may be raised and lowered through an arc starting within 3 in. of the rail and reaching to a height of 8 ft. Behind the rake is a double-V moldboard with a V over each rail. In each V, and mounted also on a horizontal shaft, is a 42-in. rotor wheel for gathering and discharging the snow that is broken up and thrown back into the V's by the rake. Two adjustable discharge or casting chutes are provided, one over each rotor wheel. These are of the revolving type to permit the snow to be cast in any direction or into the melting tank.

The plow is powered by a heavy-duty 300-hp. engine through a heavy-duty gear transmission located in the



In this frontal view of the plow the rotating feeder rake is in the raised position, giving a clear view of the 42-in. rotor wheels in the V's of the moldboard

Interior of the melting tank, showing the banks of nozzles from which hot water is sprayed onto the pulverized snow as it comes into the tank through the chutes

plow moldboard. Power is transferred from the rotor drive shafts to the rake through a chain-drive power transfer assembly between the rotor drive shaft and the rake shaft. To minimize strain the rake shaft is mounted on sealed self-lining ball bearings at each end.

Gathering wings are provided to allow a coverage of 14 ft. when they are in the extended position; when adjusted inward the wings span a width of 11 ft. or they can be folded back behind the moldboard width of 9 ft. Directly behind the forward truck of the flat car is a scarifier which plows and loosens packed snow and ice to a depth of 3 in. below the tops of the rails. This mechanism is designed for quick lift, with automatic safety release, when frogs and similar obstructions are encountered.

Hot-Water Sprays Melt Snow

Mounted along the side walls of the melting tank interior at the forward end of the unit is a series of nozzles from which a "cloudburst" of hot water is discharged in the form of pressure sprays when the unit is engaged in snow-melting work. As the snow comes through the chutes under high velocity from the rotors it is in a pulverized condition so that the particles, when contacted by the hot water spray, quickly become saturated.

When starting to melt snow about 3,500 gal. of hot water must be available in the unit. This water is confined in front of a low baffle placed at the rear end of the spray chamber of the melting tank. Over the section of the tank containing the initial water supply is a covering of steel grating, which prevents large foreign objects from getting into the circulating water supply. Steam from the locomotive is used to heat the circulating water by means of Schulte-Korting heaters. This water is circulated and discharged through the nozzles by a pump having a capacity of 125,000 gal. per hr., which is driven by the same engine that operates the rake and rotors. Suction of the water is taken over the full length of the supply section though suction pipes of unusual design.

The melting tank has a capacity of 19,000 gal. When this amount of water has accumulated from melting snow the unit is moved to a bridge or other suitable location, where the water is discharged through outlets in the lower sides of the tank. There are four such outlets, two on each side, which are 16 in. in diameter. For controlling the discharge of water, the outlets are equipped with shear gates operated manually by levers mounted on top of the tank. It is reported that the tank can be emptied in less than a minute. High efficiency is claimed for the entire unit as a result of the method of "spray" melting that is used.

The operator's cab is functionally designed to permit complete visibility. It is insulated and equipped with sufficient heating equipment for adverse weather conditions normally encountered when fighting snow. The front windows of the cab have defrosters and wipers.

Cab controls are provided for raising and lowering the rotary plow, for raising and lowering the rotary rake, for adjusting the revolving casting chutes, for positioning the gathering wings, and for controlling the scarifier. All such movements are actuated hydraulically. Gages in the cab show the level of the water in the residual compartment and in the storage end of the tank as a whole, the steam pressure at the water heating units, and the pressure of the water in the circulating spray system. Also in the cab are valves for controlling the supply of steam, and a tachometer indicating the speed of the engine. Intercommunication between the pusher locomotive and the control cab on the melter tank is provided by a two-way loudspeaker system.

A formal airport is not necessary because any fairly level strip can serve the modern business plane

Private Planes . . . Will They Have a Place in Railroad Operation and Maintenance?

By CHARLES J. MILLER
Assistant Roadmaster, Western Pacific

[The views expressed in this article are the author's own, and do not necessarily reflect opinion of the management of the Western Pacific. This article discusses the value of *private planes* as tools to deal with specialized problems of railroad operation and maintenance. This paper's views on the merits of subsidized commercial air transport remain unchanged.—Editor]

Over the years there has been a gradual transition in the methods of railroad operation and maintenance from rail-bound to off-rail equipment and procedures. Railroad employees and officers who once used only hand cars, rail-motor cars, and trains as a means of getting about over the railroad, now frequently use automobiles. Simultaneously, with improved communications and mobility of personnel due to the telephone and the automobile, individual railroad officers have been given gradually greater territorial responsibility.

Now that the private plane has progressed beyond the stage of being an "expensive toy," and can fairly be considered a reliable, usable machine, it deserves consideration as another tool for use by railroad management in meeting different railroad operating and maintenance problems. It is my purpose here to point out the possible benefits that may accrue to a railroad through the use of company-owned aircraft.

Benefits to a Railroad

An ever-increasing number of everyday uses are being found for aircraft. Farmers use them for patroling fences and ditches, cattlemen for counting livestock. Remote producers of all kinds use them to deliver products in town and bring back machinery and supplies. Utility companies use them to inspect pipe and power lines and to deposit repair men and parts where needed with a minimum of delay. Private companies use them extensively for tasks ranging from transportation of key personnel to expediting vital repair parts in order to reduce the length and impact of machine or plant shutdowns. These organizations do not rent airplanes—they own them. Their use has proved so invaluable over a period of years that they are now considered standard equipment.

From a safe operation standpoint, modern private aircraft can be considered almost foolproof (but not "damn-

fool" proof). Investigations seem to reveal that most private aircraft accidents are the result of unsafe practices (man failure), not unsafe aircraft.

How air transportation can benefit a railroad may seem a paradoxical question, but analysis will uncover some interesting possibilities. The benefits which a railroad can realize are many and varied. Some are routine; some are unpredictable. Obviously routine are:

Delivery of messages or parcels. This chore is an ideal one for the modern light plane, which can easily leap desolate western distances and dense eastern highway traffic.

Delivery of repair parts. Modern railroad machinery generally is not built of a few large, rugged pieces. Today we have powerful, highly complicated machines composed of thousands of intricate parts, the failure of any one of which could cause a breakdown. The failure of one small piece of all those thousands, then, could be responsible for expensive delays to vital shipments. That piece, rushed to the spot needed and in the custody of a man who knows what to do with it, is a tailor-made job for a liaison plane.

Last-minute payroll matters. With the 40-hour week now a major problem, many payroll periods allow very little time to collect timerolls, compute the checks and deliver them to their distribution points before payday.

Flood or fire control. An airborne control officer has a great advantage over his earthbound brother. I have assisted in checking the boundaries of a fire-damaged range land. In doing so, along with several claim agent's representatives, I walked, climbed, crawled and slid over many miles of burned-off hillside. We returned, after several hours, with *approximately* the information required. Aerial surveys can, by photographs or hand-drawn sketches, clearly define boundary fences or other pertinent landmarks in a fraction of the time — and probably at a fraction of the cost — necessary for the same accomplishment afoot. An airborne observer can quickly locate "trouble spots" and can discover unexpected situation changes which might lead to future trouble.

Routine patrol of lines in difficult country. For example, in Nevada, the Western Pacific parallels the Humboldt river for long stretches. Even in the dry season the Humboldt is one of the crookedest rivers in the U. S., and in the spring when the mountain snows are melting it changes to new channels almost daily. One Saturday in February while on a short flight, I noticed that in one spot the river had cut the W.P.'s right-of-way fence and was working close to the ballast and fill. In another spot a change in the main course of the river was obviously forming. In a few minutes I could see what kind of preventive action would be required, where, and for how many miles of line.

Emergency travel. Key men, accident investigators or trouble-shooters, can be put exactly where needed quickly and with more time to spend on the job.

Field operators of roadway equipment better educated through longer and more frequent visits by equipment supervisors. Arriving in early morning and landed nearby, these instructors have an entire and unhurried day to work with the field man.

Officers at the scene of "authority" jobs oftener. Such visits can result in great savings by giving those in authority the opportunity of discovering necessary changes in plan or procedures long before they become noticed through high cost of operations.

Important conferences attended more frequently. This is, perhaps, the most important of all the routine chores listed. An airplane, within a short space of time, can carry a group of conferees to widely separated points.

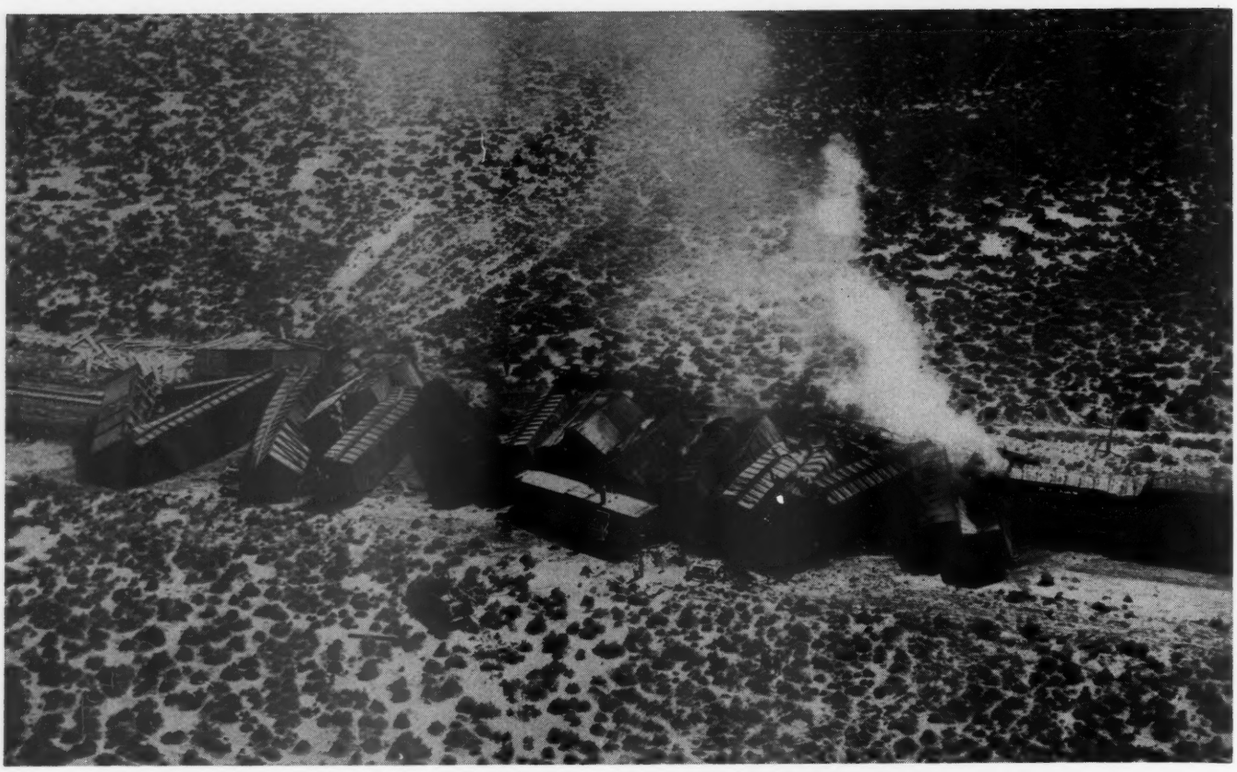
Aerial surveys save much hard work and produce more effective results than earth-bound parties can attain. The more rugged the terrain, the more useful the plane

It is in the category of "unpredicted" uses that an airplane may pay for itself many times over within a few hours. For example: A derailment occurs at some distant point, and the dispatcher is unable to obtain the accurate details necessary for relief operations. Therefore, the only logical step is to rush all possible emergency equipment to the scene. If the terrain is presumed to be favorable, all available grading machinery is started for the site of the accident to expedite the construction of a "shoo-fly" permitting the resumption of traffic with a minimum of delay. Upon arrival of supervisory officers on the ground at the derailment, however, much of the equipment brought in may be found unneeded or, worse, machinery or materials badly needed may not be at hand.

Helpful in Emergencies

In this situation if, on the other hand, a light plane is available, the key man in charge of operations can be flown to the scene of the wreck and can easily determine from the air what equipment is needed and what conditions call for in the way of rerouting traffic. In a few instances railroads have done just that — using chartered planes.

In such predicaments an airplane can relieve the railroad of a great deal of unnecessary expense caused by moving in unneeded equipment. Often this equipment is obtained on a rental basis and at great cost, for in time of trouble a railroad cannot stop to dicker for a bargain — a fact well known and exploited by many of those who have such machinery for rent. Money is saved by reducing the delay in restoring the track to service by placing proper supervisors or materials in action sooner, and money may also be saved in the reduction



When accidents occur—as in this derailment caused by a pulled drawbar—aerial reconnaissance can quickly determine the exact kind and quantity of wrecking equipment needed. It can likewise report the position of the cars, the practicability of a "shoo fly," and other information essential to quick restoration of normal service

of lawsuits by those injured who failed to receive prompt medical attention. It is evident, then, that one such calamity may well return the purchase price of several four-place business planes in a very short while.

I shall not pretend that the airplane will be as useful in everyday operations as is the automobile, but I do maintain that if a ship is ordered and put into service with the proper mental attitude on the part of those who are to decide the issue, tremendous advantages are to be gained. Even that greatest bugaboo of all, the cost of operation and ownership, when figured on a cents-per-mile and hours-per-year basis, is much lower than many people would imagine.

The operation of a private airplane is now about as common as the operation of a private automobile was not so many years ago. And a substantial number of citizens now possess at least a "private pilot certificate"—the equivalent of a driver's license. Pilots may be found in every railroad organization, employed in a wide variety of positions. I am personally acquainted with dispatchers and operators, stenographers and clerks, trainmen and yardmen, section foremen and laborers—all licensed to fly.

The large numbers and widespread distribution of trained flying personnel should dissolve any belief that only a chosen few can qualify for flight ratings, or that the airplane is still to be considered in the experimental or spectacular stage. Today's private planes are safe, usable pieces of practical equipment.

SPECIFICATIONS, FLIGHT CHARACTERISTICS AND COSTS

SPECIFICATIONS	PLANE "A"	PLANE "B"	PLANE "C"
Engine	Continental 90 hp.	Lycoming 125 hp.	Lycoming 260 hp.
Gross weight	1,500 lb.	1,800 lb.	2,850 lb
Useful load	710 lb.	830 lb.	953 lb.
Wing span	35.3 ft.	29.3 ft.	33.3 ft.
Length	22.4 ft.	20.4 ft.	27.5 ft.
Power loading	16.6 lb./hp.	14.4 lb./hp.	10.86 lb./hp.
Wing loading	8.4	12.2	15.41
Fuel capacity	18 gal.	36 gal.	40 plus 20 gal.
PERFORMANCE			
Top speed	110 m.p.h.	174 m.p.h.	135 m.p.h.
Cruising speed	100 m.p.h.	125 m.p.h.	171 m.p.h.
Cruising range	360 miles	580 miles	415 to 800 miles
Service ceiling	13,500 ft.	14,250 ft.	18,000 ft.
Landing gear	conventional	conventional	tricycle
COSTS			
Price, standard, new	$2,795	$4,265	$14,500
Cost of ownership per mile	$0.045	$ 0.08	$ 0.063
Cost per passenger mile	$0.022	$ 0.02	$ 0.016

Cost of Operation

Careful analysis of the chart herewith will provide some interesting information regarding the cost of operation, flight characteristics and specifications of an average two- or four-place airplane. The type of aircraft best suited for a particular company is, as it must be, a very touchy question. Where one type of airplane seems to be ideal, another is badly handicapped; or where a certain ship is very handy for one particular job it will fail to meet the demands of another. Therefore, the ship to be selected depends on the intended duties, the money available for purchase and operation, the terrain over which it will regularly be operated, and many other details—all of which must be digested and evaluated.

Flight characteristics such as those given in the table are generally developed by tests conducted in aircraft

operating under full load, usually near sea-level. Each of the three planes listed here are representative of others in the same general class grouping, any further distinction would be a matter of personal likes or dislikes.

The selection of a proper power plant, however, must be gone into thoroughly as the horsepower rating and power-loading factor are of great importance in determining the operational limits of an airplane. For a railroad's frequent short or rough field operation, low wing- and power-loading are highly essential as the aircraft will be required to take off in very short distances and possibly from high altitude levels where reduced air-pressure makes necessary increased takeoff power availability. The plane itself must be designed to suit the purpose for which it will be used most often, and the power plant must suit operational requirements.

For a railroad the ideal set-up, of course, would call for a four-place airplane to serve the general office, since it is there that most travel is likely to originate. After the first ship has removed all doubt as to its worth, other ships could be stationed at selected points. The personnel assigned as pilots of these ships should be multiple-duty men who could be used advantageously elsewhere when not actually engaged in flight missions. Both plane and pilot must be conveniently based nearby and kept on a constant readiness status.

Communications . . .

The Hen First . . . Or the Egg?

MISHAWAKA, IND.

TO THE EDITOR:

I have been an interested reader of *Railway Age* for many years, and I very much approve of your efforts to lessen the trend to socialism and its ugly sister: government regulation. The opposite of socialism and government regulation is free enterprise.

There are many factors involved in free enterprise. To consider but a single one of them, what state of health would you say free enterprise enjoyed if such news items as the following appeared: "Ford denied the right to build a new factory because it might take sales away from General Motors," or "John Smith denied the right to operate a grocery store because it might hurt A&P sales"? If such were the case, I would say that in the automobile and grocery business free enterprise was dead; and that socialism, favoritism, and special vested interests prevailed.

But, the same thing now actually happens in the railroad industry! And not because of socialism, government planners, or any of the wild-eyed "bright" boys in Washington; but because of the railroads themselves.

Just let some railroad try to extend its lines (the Santa Fe to St. Louis, for example), or some outside group try to haul freight cars (Seatrain), or some new form of transportation develop (the Ohio conveyor belt), and what do the railroads do? Practice free enterprise and may the best man win? Certainly not. In such cases they are 100 per cent in favor of the most vicious form of government regulation.

They fall all over themselves trying to see who can get to the I.C.C. first to protest that the newcomer might hurt their business and therefore he should be denied the right to be in business at all. They pass over the fact that the newcomer could not possibly take business away from them unless he did a better job of transportation for the public than they are doing. They ignore the spirit of fair play and clean competition which has made these United States so great. Their only concern is to use the club of government regulation to beat the newcomer to death before he can get started.

I predict that as long as this attitude continues to exist you will have a long, hard, and disappointing task to get public support for your efforts to have government regulations relaxed. This, and any other major inconsistency that may exist, must be eliminated—voluntarily by the railroads themselves—before public good will can be expected.

It is a poor criticism that doesn't offer a remedy, and my suggestion is this:

If the railroads sincerely believe that free enterprise is the best form of business operation, then prove it by ceasing to freeze out competitors. If the railroads sincerely want government regulations relaxed, then prove it by ceasing to use such regulations to deprive the public of the benefits of competition. The railroad business should be as free as the automobile business, the grocery business, or any other business when it comes to expansion. Until it is, expect to be labeled a hypocrite and to have your statements called propaganda.

CHARLES E. WHITMARSH
Owner, Whitmarsh Coal Co.

[Which comes first—the hen or the egg? A man with leg irons on cannot cut much of a figure at a dance and he is a fool to try. When time-worn regulatory limitations are lifted from the railroads, then, but not until then, they should be called upon to operate under the rules applicable to unregulated enterprise. For instance, when the railroads are made free to handle or not handle specific traffic, depending upon whether it is profitable or not—the way all contract haulers and a lot of alleged "common carriers" by other means of movement do—it will then be the proper time to advise them not to oppose competition by rivals which are not required to accept unattractive traffic that the railroads must now handle. Mr. Whitmarsh evidently considers it fair to call upon the railroads to enter the contest for traffic heavily handicapped, and to refrain quixotically from demanding that any such limitations be also applicable to their rivals. We find the logic of this argument difficult to follow.—EDITOR]

Would Forbid Construction Of Multitired Trucks

RICHMOND 5, CAL.

TO THE EDITOR:

I have just finished reading your pamphlet "The Highway Crisis," which proved to be most interesting. There can be no doubt about the fact that we have a highway crisis, in more ways than one. For what it is worth I give you my idea of ways to remedy the situation. First, a drastic way: Permit no construction of trucks which could injure the highways. This would have to be a national law. Do not permit these highway box cars to be manufactured. Also do not permit them to be altered in any way.

Here is another. Permit only certain sized tires, certain number of tires and certain number of pounds of air in each tire. In this case, an officer would only have to check the tire pressure.

Here's another. Lower the headlights. Truck headlights are placed very much higher than automobile headlights and dazzle other drivers' eyes—even on the low beam.

Here's another. Force the trucks to put fenders on wheels. At present, while traveling around town and out on the highway, the trucks pick up stones in their tires, then, when the trucks get up speed, these stones are flung out at other automobiles or pedestrians—centrifugal force, I suppose. Also on wet streets they throw muddy water all over your car, often as high up as the windshield.

R. S. EDMONDS
Conductor, A.T.&S.F.

SO MANY PHASES OF RAILROADING ARE INTERESTED IN THE "Y" that the head table at the annual banquet had to be double-tiered. These are the faces of the leaders of the railroad "Y" and their guests: Rear table, left to right: F. K. Day, Jr., asst. gen. mgr., N.&W.; W. W. Rhoads, v.p., Reading; S. D. Hurst, Jr., exec. asst. to pres., A.C.L.; F. M. Donegan, gen. supt., C.P.R.; C. R. Hook, Jr., v.p., C.&O.; J. F. Shields, grand chief engr., B. of L.E.; M. G. McInnes, v.p., Erie; L. W. Horning, v.p., N.Y.C.; P. W. Johnston, pres., Erie; R. V. Fletcher, chairman of assembly and special counsel, A.A.R.; G. M. Harrison, grand pres., B. of R.C.; D. P. Loomis, ch. Association of Western Railways; R. S. Henry, v.p., A.A.R.; W. P. Kennedy, grand pres., B. of R.T.; F. J. Goebel, v.p., B.&O.; R. Hayes, gen. mgr., C.N.R.; P. M.

How Railroad "Y"s Generate "Faith for the Future"

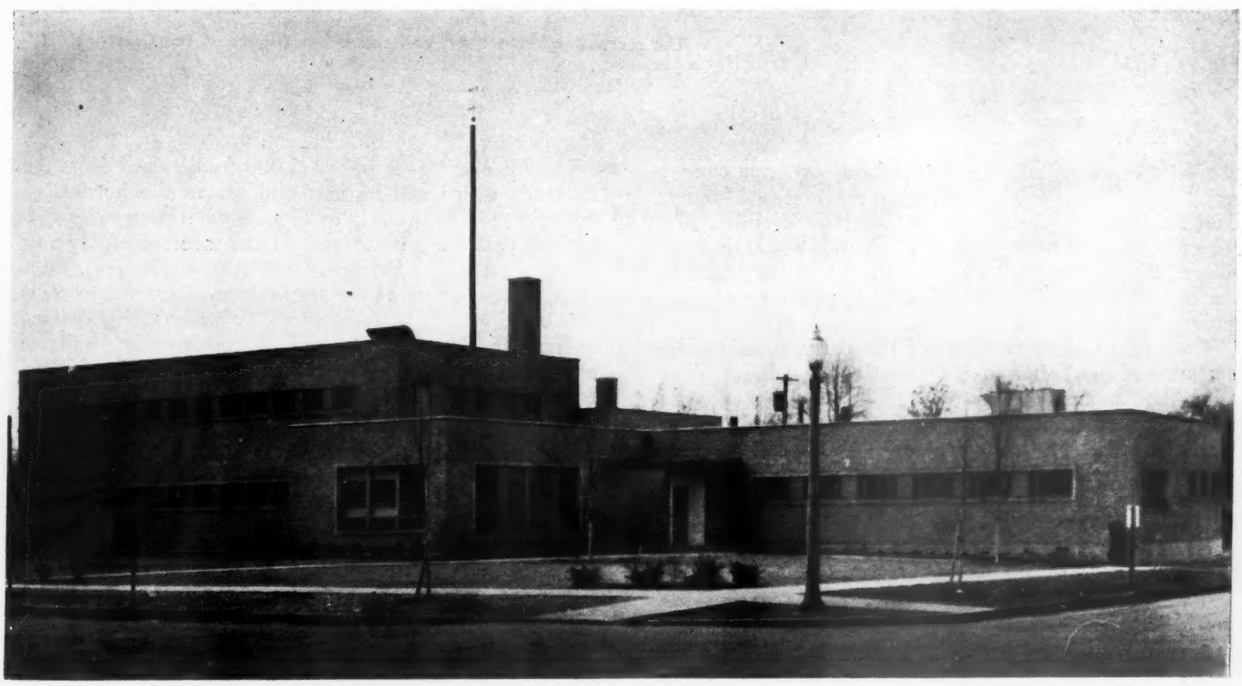
Fenton A. Chapman (left), 79, of Clifton Forge, Va., and R. R. (Railroad) Jenkins, 85, of Willard, Ohio, who were honored as the longest continuous member of the Y.M.C.A. and the oldest Railroad "Y" secretary, respectively, in North America. Mr. Chapman, a Chesapeake & Ohio engineer who is still active after 53 years service, joined the "Y" in his native Dublin, Ireland, in 1887. Mr. Jenkins has been a "Y" secretary since 1896 and secretary of the Baltimore & Ohio "Y" at Willard since 1909

National conclave hears railroads' Johnston and unions' Harrison

Definition of "the common ground of understanding in which railroad managers and the heads of the organizations can work" was the mutual theme running through speeches by the presidents of a railroad and of a labor union, respectively, at a banquet in connection with a national assembly of the railroad Y.M.C.A.'s in Cleveland on June 20 and 21. George M. Harrison, grand president of the Brotherhood of Railway Clerks and a vice-president of the American Federation of Labor, told the 200-odd delegates that he was "happy to greet my adversaries in this Christian atmosphere" and that he hoped "we will remember it over the conference table." He saw "no reason why we can't have an up-and-coming, dynamic, fast-moving, hard-hitting railroad industry," but warned that, to accomplish this end, "all groups in the industry must assume their mutual obligations."

The union chief was optimistic about the potential for "mutual understanding," declaring: "While we have our troubles as representatives of labor and management—and probably always will—I can say that we've solved more problems than have any other of the industry groups." He expressed the personal opinion that "the 'Y' has made its impression on the personnel of our entire industry" and that "so long as the 'Y' sticks to

Shoemaker, v.p., D.L.&W.; J. W. Oram, chief of personnel, P.R.R. Front table, left to right: J. J. Schruer, gen. ch., B. of R.C.; A. J. Cunningham, member for B.M.W.E. on N.R.A.B.; N. N. Baily, exec. asst., Reading; J. C. Wallace, gen. mgr., Nickel Plate; C. G. Stewart, gen. mgr., P.&L.E.; P. R. Goulett, gen. mgr., N.Y.N.H.&H.; E. F. Bloom, exec. trav. sec., transp. dept., National Council, Y.M.C.A.; Ray Scott, editor and manager, B.L.F.&E. Magazine; L. S. Jeffords, v.p., A.C.L.; Rev. M. Stephen James, member of faculty, New Brunswick Theological Seminary; W. M. Smith, v.p., R.E.A.; J. A. Urice, asst. gen. sec., National Board, Y.M.C.A.; Eric Peterson, gen. sec.-treas., I.A.M.; C. F. Wiegle, gen. mgr., N.Y.C.; W. H. Schmidt, Jr., western editor, *Railway Age*; R. J. Fletcher, gen. coun., B.&M.; D. K. Chase, asst. to v.p., P.R.R.; P. W. Milburn, trav. sec.-treas., transp. dept., Y.M.C.A.



The new Pennsylvania Railroad Y.M.C.A. at Crestline, Ohio

its knitting . . . it will have still greater opportunities in the future."

Paul W. Johnston, who extended a salute to the 100-year-old Y.M.C.A. as president of the 100-year-old Erie, expressed the opinion that "organizations such as Mr. Harrison heads have come to maturity." He believes that "both sides of the railroad industry have come of age" and that the future should be brighter than the past, for this reason.

The speaker put great emphasis on the value of the "Y" in contributing to human understanding, declaring that railroad men who are members "get a great deal more than food and lodging." He told of the study made by one railroad of the background of officers and supervisors who failed to "make the grade." Many interviews with their associates and superiors produced the finding that fewer than 25 per cent of the failures were due to lack of technical competence. The remainder of them could be traced directly to "failure to get along with people."

The public relations of the railroads, according to the Erie president, are based largely on what the public thinks of the railroads' employees, and this esteem is based to a great extent on the part railroad employees

The recreation room (left) and snack bar (right) at the Crestline "Y"

play in community life. Thus a relations program cannot reach an employee unless it also reaches his family. Because enemy nations value human life so little, Mr. Johnston (a brigadier general in World War II) foresees a difficult struggle ahead, in which "we may have to put less emphasis on our rights and more on our obligations."

The first national conclave of the Transportation Department of the Young Men's Christian Association since 1947, the "assembly" was held in Cleveland immediately prior to an international convention of the Y.M.C.A. as a whole, in celebration of the 100th anniversary of its founding on this continent. The railroad sessions were attended by a large number of secretaries in charge of the local associations, together with "lay" leaders, made up largely of railroad and union officers. R. V. Fletcher, special counsel of the Association of American Railroads, and an active leader in the railroad "Y" for many years, presided at all sessions of the assembly with the adroit and droll witticisms for which "The Judge" is noted.

Aside from their spiritual and social mission, the railroad Y.M.C.A.'s constitute "big business," it is evident from a report on national activities for the past 18 months, presented to the assembly by D. P. Loomis, chairman of the Association of Western Railways, and chairman of the Transportation Department, Y.M.C.A. Some 142 local railroad "Y" associations operate 190 buildings on 48 railroad systems. Into new buildings and additions the railroads themselves put more than $2 million during the period reported on, plus an additional $500,000 in maintenance. Total annual budgets of the railroad "Y"s last year ran about $7 million. Membership increased 11,000 in 1950, compared with 1949, as a result both of stepped-up employment on the roads and an intensified membership campaign. Mr. Loomis emphasized the necessity for the railroad "Y"s to build even better and fuller programs for their members and urged that careful plans be set up for this purpose.

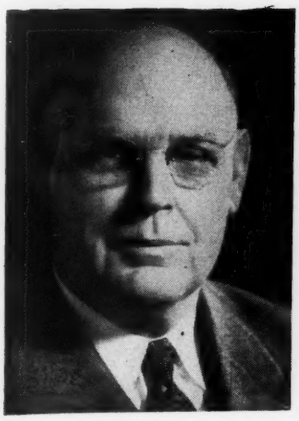
Mr. Fletcher spoke of a $75,000 fund raised from the railroads which will be used "to extend the borders of the railroad 'Y,' especially in western territory," pointing out that the greater part of the membership is now in the East and Southeast.

The greater part of the assembly was devoted to separate meetings of five committees, or study groups, which operate on a permanent basis to examine the details of operation of local associations. Since the "Y" is a democratic institution, these bodies generally draw up their own "ground rules," and the reports of the national committees are recommendations, not orders. The chief issues considered by these study groups were summarized for the entire assembly by L. W. Horning, vice-president—personnel and public relations, New York Central system.

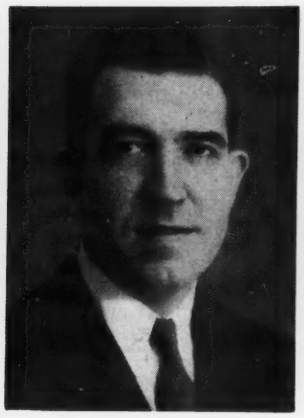
He emphasized that "the 'Y' is more than a food and lodging business," and that its work must go beyond that field. "This is not now being done to the fullest extent, and will not be done until a definite program is set up." He expressed the opinion that one of the big tasks of the "Y" is "how to achieve better understanding between labor and management."

Special study committees and their chairmen are: Executive (Finance)—Mr. Loomis; Membership—Robert S. Henry, vice-president—public relations, A.A.R.; Personnel—J. W. Oram, chief of personnel, Pennsylvania; Program—R. M. Shoemaker, vice-president, Lackawanna; and Records and Research—S. D. Hurst, Jr., executive assistant to president, Atlantic Coast Line.

Elected members-at-large to represent the Transportation Department on the National Council of the Y.M.C.A. were Mr. Fletcher, Mr. Horning, and D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen. M. G. McInnes, vice-president of the Erie, welcomed the delegates to Cleveland—where the first railroad "Y" was established 79 years ago—on behalf of the railroads serving that city.



B. M. Brown
Chairman



H. J. Cover
Vice-chairman

V. R. Hawthorne
Executive vice-chairman

F. Peronto
Secretary

Old Mechanical Problems Still Acute

Hot boxes and other freight-car defects live subjects of discussion at three-day meeting of the Mechanical Division at Chicago—Railroad men warned of dangers of nationalization

J. R. Jackson
Mechanical Engineer

That the railroads must convince other businesses that the large segment of the country's transportation plant which is publicly owned should be paid for on a business-like basis was stressed by W. H. Schmidt, Jr., western editor of *Railway Age*, in the opening address at the twenty-fifth annual meeting of the Mechanical Division of the Association of American Railroads held at the Congress Hotel, Chicago, June 26 to 28. Following Mr. Schmidt's address, J. H. Aydelott, vice-president, Operations and Maintenance Department, A.A.R., outlined the problems which the railroads face during the coming months as a result of defense mobilization activities.

W. J. Patterson, member, Interstate Commerce Commission, addressed the meeting on the second day, calling attention to a number of conditions affecting safety which are in need of improvement. Mr. Patterson's address will be the subject of an article in a later issue.

The opening session began a program for the presentation and discussion of 17 technical reports. During the meeting the following were elected to serve as members of the General Committee for a two-year term expiring in June 1953: F. K. Mitchell, manager equipment, New York Central system; A. G. Kann, general superintendent equipment, Illinois Central system; G. W. Bohannon, chief mechanical officer, Chicago & North Western; E. R. Battley, chief motive power and car equipment, Canadian National, and D. S. Neuhart, general superintendent motive power and machinery, Union Pacific. Officers were elected at the last annual meeting to serve two-year terms and none was elected this year.

In its report the General Committee called attention to the fact that the board of directors of the A.A.R. at a meeting on November 16, 1950, unanimously approved the proposed standard floor plans for passenger-train cars as prepared by the Passenger Car Design Committee of the American Railway Car Institute in cooperation with the Committee on Passenger Car Specifications of the Mechanical Division for submission to the member roads as recommended practice. It also called attention to the annual meeting of the Coordinated Mechanical Associations which will be held at Chicago September 17-19. The committee recommends that mechanical departments of member roads allow as many of their supervisory officers as possible to attend these annual conventions and examine the exhibits which will be assembled in connection with them.

Presiding during the meeting was B. M. Brown, general superintendent of motive power of the Southern Pacific, the chairman of the division. Other officers of the division are H. T. Cover, chief of motive power, Pennsylvania, vice-chairman; V. R. Hawthorne, executive vice-chairman, unable to be present because of ill-

ness; Fred Peronto, secretary; and J. R. Jackson, mechanical engineer.

In tracing the parallel between conditions now existing in the United States and the pressures which produced the socialization of railroads, trucks, canals and docks in Great Britain three and a half years ago, Mr. Schmidt said:

"Ideology—the socialist's timetable—obviously was an important reason for Britain's step. So also was the long-held belief by railroad employees that their lot would be bettered through government ownership. But equally important was the conviction by many—including many adherents of the Conservative and Liberal parties who are businessmen—that the privately owned, taxed and self-sustaining railroads could not cope with the loss of traffic to trucks and buses on the public highways.

"Our own railroads here must exist in a climate far more hostile than that which existed in Britain before socialization. Public aids to highway and air transport here are much bigger and more serious than they were in Britain. The outright support of inland waterways from general taxation, which is common here, did not obtain in Britain. Thus, while we have neither doctrinaire socialists nor unions which consistently support government ownership, we have the third disease in a more virulent form than it existed in Britain; i.e., public support of competing forms of transport in so unbusinesslike a fashion that their prices to the public are artificially depressed and bring about progressive diversion of traffic from privately supported transport facilities."

Mr. Schmidt pointed out that pressure for continued public subsidization of air, water and motor transportation does not come, for the most part, "from long-haired radicals, from union leaders, or from the public in general."

To get justice, he asserted, the railroads must first convince the leaders of other businesses that the present policies they advocate are leading to complete socialization of all transport. "No businessman" he said, "can look on the experience of Britain during the past three and one half years and regard that prospect with indifference.

"The fact that the railroad employees of Britain are far from pleased with the working-out of government ownership of transport—and say so openly and bitterly—is an important argument by which our railroads can rouse their own employees to action against influences which weaken the railroads and will, if unchecked, lead surely to government ownership of all transport."

Hurdles of 1951

Mr. Aydelott classified the pressing problems faced by the railroads during 1951 under three heads: materials, manpower, and fuel. The difficulties of securing an adequate supply of materials, he said, arise primarily from the demand for our own and our European allies' defense effort. Part of the increased demand for freight cars, he said, arises from the increased volume of production in many fields since the close of World War II. The railroads, he said, have bragged too much about their capacity to meet emergencies. He stressed the need of more cars now, pointing out that, because of the tremendous rate at which old cars have been retired, the gain in the number of freight cars in the 12 months ended May 31 was less than 3,000.

The Defense Transport organization has supported the railroads' effort to overcome the shortages of the past year and its heavy loading orders have helped some, but Mr. Aydelott is not sure whether these orders have been saving cars or only have seemed to do so, causing the railroads to lose business to the highways. One of the dampers on the enthusiasm of the public in support of the mobilization effort is the maintenance of the five-day week. As long as this is continued, Mr. Aydelott feels that it will be difficult to secure hearty support in carrying out measures to save car-days by heavy loading and prompt loading and unloading.

Mr. Aydelott dealt with the effect of the new draft law which discourages deferments by extending the termination of the obligation to render military service from the age of 28 years to 35 years for deferred men. He told of the management manpower committees which have been set up at large employment centers on which there are railroad members and said that the railroads would soon be advised of the personnel and locations of these committees. These committees, he believes, will give the railroads an "even break" in the distribution of manpower.

While the railroads are consuming as diesel fuel only two per cent of total petroleum production, Mr. Aydelott said that diesel fuel is becoming competitive with heating oils and with the large amounts of kerosene being used for jet plane propulsion. He urged the Mechanical Division to study diesel fuel specifications to find out how much certain characteristics of the fuel could be lowered to increase the base of supply without causing operating difficulties.

In closing, Mr. Aydelott said that every statistical yardstick of maintenance and operating efficiency had improved in 1950. But, he said, hot boxes are still an acute problem and, to solve it, there must be 100 per cent observance of all of the requirements of the rules.

Disturbing Defects

Chairman Brown, in summing up the problems before the Mechanical Division, laid emphasis on defective equipment and the continuing hot-box problem. He said, in part:

"Defective equipment, particularly freight cars, continues to be one of the prevalent causes of accidents, derailments, lading damage and delays to freight in transit.

"The report of the Committee on Train Accidents of the A.A.R. Safety Section, dated May 4, 1951, shows that during 1950, 34 per cent of train accidents resulted from defects in or failure of equipment; and the trend has been generally upward for the past 10 years.

"Serious accidents have occurred this year from such causes as broken truck frames, couplers dropping on rails, burned off and broken journals, defective wheels, brake rigging coming down and other items of equipment defects.

"Letters have been issued on several occasions since January 1 of this year by the executive vice-chairman of the division, calling attention to many items of car maintenance that are causing trouble and in need of special attention. Among these are maintenance of dust-guard plugs and seals and journal-box lids to keep rain, snow and foreign matter from contaminating box packing; the application of heavy coats of paint or other protective coatings to truck side frames and bolsters in violation of the rules, nullifying proper inspection; importance of cleaning drain holes in the bottom section of truck side frames to avoid excessive corrosion; importance of proper inspection and repairs while on repair track to couplers, draft gears and attachments, truck sides and truck bolsters, journal boxes, brake beams, hangers, safety supports, piston travel, leakage in the brake system, safety appliances and condition of wheels

to see that cars are in good condition for safe transport and to avoid shopping of the car under load, causing delay to car and contents.

"One of the most aggravating problems still confronting the railroads is the perennial hot box. Higher sustained operating speeds and fewer stops with diesel locomotives, greater utilization of equipment, improved yards and signaling and other factors of modern railroading, have all contributed to this problem. Hot boxes not only delay the steady flow of essential traffic, but also involve serious hazard of accident.

"This is not a new subject before this division and it has not been neglected. The General Committee and the other committees of the division have continued to give it serious study, and during the past year have taken emergency action to improve specifications for packing and journal box oil. Other action taken includes reducing the period for repacking journal boxes from 15 months to 12 months; increasing the mechanical inspection staff for the purpose of intensifying checking into journal-box lubrication practices; encouraging the use of packing retaining devices; increasing and broadening personnel and representation of the Committee for Lubrication of Cars and Locomotives; and continuing research to improve the design of bearings and quality of lubricating materials.

"These efforts are in the right direction, but the results have been disappointing. Hot boxes are still causing serious trouble; some of us may be inclined to blame foreign cars and minimize our own shortcomings. The solution lies in the hands of each individual railroad which must adopt sound maintenance, inspection and lubrication practices, secure the proper materials, and establish operating rules that will permit proper application of these practices, and all departments on the railroads must cooperate to bring this situation under control."

COMMITTEE REPORTS

LOCOMOTIVE CONSTRUCTION

A. G. Hoppe

Auxiliary Air Supply.—There have been several accidents involving diesel-electric locomotives in which the brake cylinders were damaged or other damage occurred, which resulted in loss of main reservoir air pressure, and the locomotive unit separated from the train or from its mate units, and continued in motion out of control. At a meeting of the Safety Appliance Committee on June 26, 1950, the matter was assigned to a joint committee consisting of representatives of the Committee on Brakes and Brake Equipment, and the Diesel Section of the Committee on Locomotive Construction.

The efforts of the joint committee were directed to working with the builders, principally in connection with use of the air provided by the new rule. Following a preliminary meeting on September 21, two additional meetings were held on January 18 and February 21, 1951 to develop the changes required on existing locomotives: (1) To meet the requirements of the new rule as written; and (2) to coordinate the changes required on locomotives of the various builders so that as nearly as possible the procedure required to reverse the traction motors would be identical on locomotives of all manufacturers.

The subject falls into two main divisions, namely, (1) Compliance with Rule 205 (a) which provides only for a dependable source of air for operating controls in the event of loss of main reservoir air pressure; and (2) making the supply of air provided under the new rule effective in stopping a locomotive otherwise out of control, by reversing or "plugging" the traction motors.

The report contained a detailed discussion of the many factors involved and developed that (1) the locomotive must suffer damage to the main reservoirs or piping, or to the brake cylinder to cause the loss of main reservoir air pressure; (2) the locomotive or a unit suffering such damage must separate from the train or from succeeding units; and (3) the locomotive must remain on the track and continue in motion, without normal functioning of the air brakes. Complete protection would involve installing valves for each brake cylinder, and possibly at strategic locations in the brake cylinder lines, and in main reservoir lines. However, partial protection could be provided and it seems that any device which would definitely prevent the loss of main reservoir air, and have the possibility of having the brake cylinders on even one side of one truck functioning, would be preferable to complete loss of the air brake operation.

Locomotive Sanding System.—The joint subcommittee from the Signal Section and the Mechanical Division having as its assignment a study of the possible influence of locomotive sanding on track circuit shunt failures, prepared a report including the recommendation that the recommended practice for Locomotive Sanding System in the Manual be reviewed and brought up to date, taking into consideration that every effort must be made to avoid excessive build-up of sand on the rails. Considering that the desired end results are effective sanding for traction and braking without sufficient sand build-up on the rails under any condition to cause a false signal indication, the first approach was a study of the pattern of the sand delivery obtained with the several sizes of sand pipes and diameters of converging nozzles commonly used. Sand traps from three manufacturers were used in the tests and the tests were of sufficient breadth to develop that the pattern of delivery for a given pipe or nozzle size remains approximately the same throughout the range of delivery rate that may be used.

The committee recommended, as a letter ballot proposition, that pages F-238 to F-240 of the Manual be revised in accordance with the following:

Steam Locomotives

Sand pipes to be of 1 in. extra heavy pipe.

Rate of sand delivery per sand pipe per minute:

Engine having one sand delivery per rail, 3 lb. maximum.

Engine having two sand deliveries per rail, 1¼ lb. maximum.

Engine having three or more sand deliveries per rail, 1 lb. maximum.

Sand pipe or nozzle to be positioned to deliver the sand to the rail over an area 3 in. to 5 in. ahead of wheel contact with rail through to the point of contact. The delivery to be angled slightly inward to make maximum contact on the inner half of the rail face having the protection of the wheel flange to reduce the loss.

On drivers equipped with lateral motion device, or lateral cushioning device, sand pipes should be provided with flexible arrangement so that sand pipes can follow drivers when taking curves.

Diesel Locomotives

Sand pipes to be of 1 in. extra heavy pipe.

Rate of sand delivery one pound per minute per sand pipe.

With the sand pipe or nozzle delivery position changing from that when sanding for traction in the brake release position to that when sanding during brake application

with fully worn brake shoes, xtreme care must be exercised in the application of the sand pipe to provide effective sanding for traction and braking. The sand delivery should be into the wheel contact at rail when brakes are set and with fully worn shoes. This results in delivery over an area 3 in. to 5 in. ahead of wheel contact for traction. The high velocity obtained with the ⅝ in. or ½ in. converged nozzles results in a more effective rail conditioning and positive delivery of sand.

It was the opinion of the committee that any complaints regarding excessive sand build-up on rails will be corrected with the exercise of reasonable care regarding a fair quality of sand, preferably to the coarse side of the sieve range of the usual specification for traction sand; sand pipes or nozzles of diameter to provide a high velocity delivery; positioning of delivery nozzles to insure effective delivery of sand to point of wheel rail contact; and maintenance of sand trap adjustment to approximately the recommended delivery rates.

[The report included diagrams for recommended sand pipe location.—EDITOR]

Mounting Control Devices on Journal Boxes.—A joint subcommittee has endeavored to adopt a standard method of mounting control devices on journal boxes of both locomotives and cars. In general, the method of mounting control devices on journal boxes shown on Manual page D-4C-1947 is recommended for both locomotives and cars.

The recommendations of the Locomotive Construction Committee are covered by two designs included in the report which were recommended for letter ballot as recommended practice. If approved, they will be included as recommended practice in the Manual.

Standardization of Pedestal Widths.—In 1940 the committee undertook a study in an effort to provide standard pedestal arrangements for roller bearing journals for engine trucks, drivers, trailer trucks, and tenders of steam locomotives. The study was subsequently extended to include diesel-electric and electric locomotives. The committee sees no value in continuing any further work on this subject and recommends dropping the matter.

Fusion Welded Boilers.—The present status of complete boilers built by the fusion welding process:

Number	Railroad	Type of loco.
1	Delaware & Hudson	2-8-0
2	Canadian Pacific	4-6-2
10	Canadian Pacific	2-8-2
1	New York Central	4-6-4
1	Delaware & Hudson	4-6-6-4
5	Chesapeake & Ohio	2-8-4
10*	Chicago, Milwaukee, St. Paul & Pacific	4-8-4
6	Chicago & North Western	4-6-4

* Seven have been installed and are in service.

In connection with welded shells, present status is as follows:

Three additional welded shells are to be constructed for the New York Central's 6000 Class 4-8-4 type locomotives. There are 27 locomotives of this class in service and when the three shells are completed and applied, all locomotives of the 6000 class will be equipped.

Also, 10 additional welded shells have been constructed and 10 additional are on order for N.Y.C. 4-6-4 type locomotives. When built and applied, there will be 40 4-6-4 type locomotives on the New York Central with welded shells.

The Santa Fe has placed orders for a total of 25 welded boiler shells for application to existing boiler back ends of 4-6-4, 4-8-4 and 2-10-4 type locomotives. Sixteen of these shells have been manufactured as of January 29, 1951. Seven have been applied and five are now in the process of application. The installations to date, including those now in process, are as follows:

No. of welded shells applied	Type of locomotive
1	4-6-4
7	4-8-4
4	2-10-4

It will be noted that since the previous report, 34 additional boiler shells have been ordered.

Seal Welding of Staybolts.—An item was included in the 1950 report indicating that the practice of seal welding staybolts has been sufficiently extended to warrant adoption as recommended practice. Therefore, a drawing has been prepared and it is recommended, as a letter ballot proposition, for adoption as recommended practice for inclusion in the Manual.

Axle Press Fits.—The present recommended practice covering mounting pressures for driving, trailing, and engine truck axles, and crank pins, shown on pages F-129-1932 and F-130-1932 of the Manual, is not applicable to prestressed bores and rolled wheel fits. The Committee on Axle and Crank Pin Research has developed the procedure for making such fits and has included suitable mounting pressures. It is recommended, as a letter ballot proposition, that this procedure be adopted as recommended practice.

Two drawings outline the recommendations.

Steam Locomotive Storage.—Standard instructions covering the detailed procedure to be followed in placing locomotives in storage and covering their care while in storage have been obtained from 26 representative railroads. This information has been analyzed and is covered in detail in the report.

Diesel-Electric Locomotives

Recently the committee has been in contact with the Locomotive Maintenance Officers' Association with the idea of preparing a list of practices and materials of diesel-electric locomotives that can be standardized. This organization is now preparing such a list, which will be submitted to the committee for study.

Cab Arrangement, Switching Locomotives.—The locomotive builders have submitted scores of blue prints covering the cab arrangement on the different types of switching locomotives now in service. The committee feels that these prints bear out the need of arriving at a standard location for the brake valve, engine throttle, and other controls.

A questionnaire has been prepared with a diagram including proposed dimensions of pertinent details concerning the cab arrangement on diesel-electric switching locomotives. The secretary has arranged to submit this questionnaire and diagram to the regular list of 32 principal roads, to determine if it will be consistently possible to recommend standardization of the general arrangement of cab equipment.

Bolts for Roller Bearing Boxes.—Rapid dieselization has introduced many different types and sizes of journal box stud and cap bolts. Where it is necessary to remove and reapply cap screws for regular inspection and maintenance of roller bearing boxes, it has been costly and inconvenient to maintain a considerable number of wrenches of different sizes. The committee has been in contact with the manufacturers with the view of providing the least number of different kinds of cap screws consistent with journal box design.

Standardization of Air Brake Equipment.—The committee reported progress on this item. It is felt that one of the benefits of investigation will be the prevention of any additional non-standard arrangements being developed by the builders.

At present it has been agreed by the brake committee and the Locomotive Construction Committee that a joint meeting should be held with the locomotive builders and the air brake manufacturers to discuss the following:

1. Safety control
2. Locomotive overspeed control
3. Split reduction with overspeed or safety control
4. Break-in-two protection
5. Sanding bail on automatic brake valve
6. Controlled emergency brake cylinder build-up
7. Location of parts for maintenance
8. Studs instead of cap screws
9. Dynamic interlock
10. Standard plug connectors for electropneumatic brake circuits
11. Standard hose and couplings for air connections
12. Extra heavy pipe
13. Air gages
14. Slow charging of equalizing reservoir with D24 brake valve
15. Governor synchronization
16. Radiation and cooling of compressor air
17. Angle cocks
18. Booster unit
19. Brake-cylinder gage pipe

Fire Protective Equipment.—Investigation of

FIRE-EXTINGUISHER EQUIPMENT—DIESEL-ELECTRIC LOCOMOTIVES

Railroad	Locomotive Service	Unit	Cab: Carbon tetrachloride qt. 1	1½	2	4	Cab: Carbon dioxide lb. 15	20	50	Cab: Dry powder lb. 20	30	Engine room or compartment: Carbon tetrachloride qt. 1	1½	2	4	Engine room or compartment: Carbon dioxide lb. 15	20	50	Engine room or compartment: Dry powder lb. 20	30
Baltimore & Ohio	Road	A	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..
Chesapeake & Ohio	Switch:																			
	Present	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
	New	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..
New York Central	Switch	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2
	Road	A	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	4
		B	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
New York, New Haven & Hartford	Switch:																			
	Old	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
	Old alternate	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
	New	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
	Road:																			
	Two engines	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	1	..	..
	Road:																			
	Single engine	A	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..
	Road switch:																			
	44 ton	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
	1,500 hp:																			
	Old	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
	New	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Southern Pacific	Switch	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
	Alternate	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
	Road:																			
	Two engines	A	..	..	1	..	..	..	..	..	..	..	..	..	2	..	3	..	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	2	..	4	..	..	..
	Road:																			
	Single engine	A	..	..	1	..	..	..	..	..	..	..	..	..	2	..	4	..	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	2	..	4	..	..	..
	Road switch:																			
	44 ton	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
	Large	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Canadian National	Switch	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
	Alternate	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
	Road:	A	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
St. Louis-San Francisco	Switch	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
	Road:																			
	Two engines	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2
	Single	A	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2
		B	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2
	Road switch:																			
	1,500 hp.	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Union Pacific	Switch	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
	Road:																			
	Passenger	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	2
	Freight	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	2
	Freight alternate	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	..	..
	Road switch	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..
Atchison, Topeka & Santa Fe	Switch	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
	Road:																			
	Two engines	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2
	Single engine	A	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	2
		B	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2
Pennsylvania	Switch	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..
	Road	A	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	4	..	1
		B	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	2
Chicago, Milwaukee, St. Paul & Pacific	Switch	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
	Road	A	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..
		B	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..
	Road switch	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..

fire prevention by the committee has been carried out in cooperation with the Fire Protection and Insurance Section. It is evident that the greatest fire protection available is the maintaining of general cleanliness in and about the locomotive. This problem includes oil leaks from the engines, fuel tank, steam generators and their appurtenances, and grease leakage on traction motor gear cases. Too much stress cannot be placed on the elimination of all oil leaks, and the manufacturers must always strive for better joints at all points on the diesel engines and accessories. Better gaskets should be forthcoming with the availability of modern materials.

The cleaning of diesel locomotives, both interior and exterior, is a major problem of both maintenance and cost. The locomotive builders should make every effort to provide an arrangement that will present the smoothest contour possible, both inside and under the locomotive. This will permit easy cleaning with modern spray equipment and cleaning materials that are now available. As a result of the locomotive design, much difficulty is being encountered in using this modern spray equipment. In many cases it is necessary to perform this cleaning by hand.

Several types of fire extinguishers with their different extinguisher media are being studied in cooperation with the Fire Protection and Insurance Section. The table shows fire extinguisher equipment in use.

Mounting Pressures for Steel Wheels.—It has been found desirable to provide a recommended practice to cover suitable pressure for mounting wrought steel wheels on gear driven and idler axles on locomotives. The matter was considered by a joint committee of members of the Committee on Wheels and the Committee on Locomotive Construction, and it is recommended that the table below be submitted to letter ballot as recommended practice for inclusion as a new page in Section F of the Manual.

Mounting Pressures for Wought Steel Wheels on Gear-Driven and Idler Axles of Locomotives Other Than Steam

Diameter of wheel seat (in.)	Mounting pressures (tons) Minimum	Desired	Maximum
6.000 to 6.250, inclusive	75	80	95
6.375 to 6.625, inclusive	75	85	100
6.750 to 7.000, inclusive	75	90	110
7.125 to 7.375, inclusive	75	95	115
7.500 to 7.875, inclusive	80	100	120
8.000 to 8.250, inclusive	85	105	125
8.375 to 8.625, inclusive	90	110	130
8.750 to 9.000, inclusive	90	115	140
9.125 to 9.375, inclusive	95	120	145
9.500 to 9.750, inclusive	100	125	150
9.875 to 10.125, inclusive	105	130	155
10.250 to 10.500, inclusive	110	135	160
10.625 to 10.875, inclusive	110	140	170
11.000 to 11.250, inclusive	115	145	175
11.375 to 11.625, inclusive	120	150	180
11.750 to 12.000, inclusive	125	155	185
12.125 to 12.375, inclusive	130	160	190
12.500 to 12.750, inclusive	130	165	200
12.875 to 13.250, inclusive	135	170	205
13.375 to 13.625, inclusive	140	175	210
13.750 to 14.000, inclusive	145	180	215

Desired mounting pressures are based on 13 tons per inch of diameter, expressed in the nearest 5 tons with an allowable variation of 20 per cent over and under, except the first three minimum pressures, which are shown as 75 tons. This pressure is considered better practice for these three sizes.

Overheating of Motor Bearings.—As stated in the report last year, all known devices that will furnish any degree of protection or alarm for an overheated suspension bearing or traction motor armature shaft bearing have been considered. Experience with available thermal type alarms does not justify any recommendation on their use for this purpose at this time. The danger from an overheated traction motor armature bearing is when the rotation of the wheel is interrupted. There are three known appurtenances that can be used to give indication of the interruption of the rotation of the wheel, and some of each are on test and are being followed by the committee. It appears that some of these devices can also be utilized to give a better wheel slip control than is now afforded by present devices in common use.

The warning given in last year's report is again repeated —Railroads should make certain that all employees understand the significance of repeated wheel slip indications, and repeated ground relay actions while en route; emphasizing the need for inspection of the diesel locomotive for possible sliding of wheels when such repeated warnings are given by these devices. Such inspection must be made before the affected power plant is shut down.

The report included lengthy discussions of two broad subjects, one the combustion of coal and the other gas turbine development. The coal combustion discussion outlines a series of tests and investigations on several roads with the idea of recording the relation of steam locomotive devices and their application to the efficiency of fuel combustion and gave the results of tests run by the Standard Stoker Company and the Pittsburgh Coal Company.

The discussion of gas turbines was in the nature of progress reports on the General Electric, Westinghouse and Baldwin-Lima-Hamilton locomotives and the coal-burning gas-turbine development of the Bituminous Coal Research group. Most of the information in this section of the report is already a matter of record.

The members of the committee were A. G. Hoppe (chairman), engineer research and development, Milwaukee.

Steam and Electric Locomotive Section: C. H. Knowlton (vice-chairman), assistant engineer equipment, New York Central; H. C. Wright, general superintendent motive power, Pennsylvania; G. M. Harding, assistant chief mechanical engineer, Canadian National; H. H. Lanning; and J. L. Ryan, mechanical engineer, Frisco.

Diesel Locomotive Section: G. F. Wiles (vice-chairman), supervisor diesel-electric locomotive operation, Baltimore & Ohio; K. Cartwright, general mechanical superintendent, New Haven; H. V. Gill, superintendent shops, Santa Fe; F. Thomas, assistant to general superintendent equipment, diesel and electric, New York Central; and D. R. Calleri, mechanical engineer, Southern Pacific.

Gas Turbine Locomotive Section: H. C. Wyatt (vice-chairman), assistant general superintendent motive power, Norfolk & Western; E. R. Hauer, assistant superintendent motive power, engineering, mechanical, Chesapeake & Ohio; J. L. Carver, mechanical and research engineer, Illinois Central; H. Rees, mechanical engineer, Union Pacific; and F. H. Einwaechter, chief engineer, motive power and equipment, Baltimore & Ohio.

(*The report was accepted with one amendment and referred to letter ballot.*)

GEARED HAND BRAKES

E. P. Moses

A.A.R. certificates of approval have been issued for 31 types of geared hand brakes—19 vertical-wheel, 9 horizontal-wheel and 3 lever types. The changes to be made in the listings of A.A.R. approved hand brakes as shown in Interchange Rule 101 (Code of Rules dated January 1, 1951) are:

Manufacture of the Orme Company's Champion vertical-wheel hand brake, Drawing 1124, has been discontinued.

Manufacture of Klasing vertical-wheel hand brake, Drawing D-959, has been discontinued, except for repair parts.

Klasing vertical-wheel hand brake, Drawing D-1051, is added to the list.

Superior vertical-wheel hand brake, Drawing 726, is added to the list.

Union Asbestos & Rubber Co. (Equipment Specialties Division) vertical-wheel hand brake, Drawing 3750, is changed to Drawing 3750-A.

Superior horizontal-wheel hand brake, Drawing 565-E, is added to the list.

Superior horizontal-wheel hand brake, Drawing 603-D and 668-B, is changed to Drawing 603-E and 668-A.

Standard Bell Crank.—Tests of the A.A.R. 50 bell crank (shown in Fig. 1, 1950 report) show that the variations in power, when substituted for the manufacturers' designs, are relatively slight. Therefore, retests of certified hand brakes because of this substitution are not considered necessary. The committee recommends, as a letter ballot item, that A.A.R. specifications be revised to include the requirement that the A.A.R. 50 bell crank be furnished with all vertical-wheel and lever-type hand brakes, and that the drawing be incorporated in the manual.

Sheave Wheel.—Certificates of approval for lever-type hand brakes are based on tests of these brakes in combination with bell cranks. To protect situations where it is necessary to substitute a sheave wheel for the bell crank the committee recommends, as a letter-ballot item, that a paragraph be included in the A.A.R. specifications for geared hand brakes to make sheave wheels permissible providing multiple levers are used to bring the power of the piston up to the required force.

Uniform Brake-Chain Length.—Tentative agreement has been made for a standard length of 21-9/16 in. from the center line of the lower attachment rivet hole in the housing to center line of clevis rivet or bolt (connection to vertical pull rod). In the interests of interchangeability the brake chain (upper unit) for geared hand brakes of the vertical-wheel type should be furnished accordingly.

Non-Standard Hand Wheels.—The committee is investigating the interchangeability of hand wheels desirable from a maintenance and repair point of view. Exceptions have been taken to this procedure because it makes correct identification of the various makes confusing and difficult.

Location of Brake Step.—The drawings in the Supplement to the Manual have been changed to show the brake step level with the adjacent end ladder tread as recommended in the 1950 Report.

Foot-Operated Geared Brakes.—Tests of a full-size metal model of a foot-operated brake developed by a railroad employee showed it to be materially deficient in power, indicating the need for radical design changes. The matter is being continued for further consideration and consultation with the inventor.

The members of the committee are E. P. Moses, (chairman), engineer car equipment, New York Central system; J. P. Lantelme, assistant engineer, Pennsylvania; H. L. Holland, assistant mechanical engineer, Baltimore & Ohio;

W. A. Pownall, assistant to general superintendent motive power, Wabash; and J. R. Jackson, mechanical engineer, Mechanical Division, A.A.R.

(The report of the committee was accepted and the recommendations referred to letter ballot.)

ARBITRATION

J. A. Deppe

During the year Cases 1834 to 1836, inclusive, have been decided and copies forwarded to the members.

The following principal changes are recommended:

With the concurrence of the Committee on Couplers and Draft Gears, modification of the third note following Paragraph (d-1) of Rule 3 to provide specific reference to short draft gears approved for cars of special construction.

With the concurrence of the Car Construction Committee, modification of Paragraph (r-1) of Rule 3, to indicate that means to hold sliding type doors on refrigerator cars open is not required.

Modification of Paragraph (k-2) of Rule 4, to indicate that road issuing defect card may, at its own discretion, also issue additional defect card for unconcealed associated unfair usage defects when so requested by car owner.

With the concurrence of the Wheels Committee, modification of Rules 9, 10, 70, 82, 98 and 101 to establish a more equitable basis for charges and credits for one-wear wrought-steel wheels reclaimed by turning, and to avoid the necessity for following such wheels through the wheel shops to complete billing transactions.

Elimination of last paragraph and note following of Rule 16, to make the testing of safety valves on tank cars unnecessary by member roads.

With the concurrence of the Tank Car Committee, modification of Interpretation No. 1 of Rule 16, to insure proper patching of tanks of tank cars.

Modification of Notes 2 and 3 following Section (e) of Rule 17, to provide car owner proper protection for sliding chair castings when A.A.R. Standard No. 18 beams are applied.

Elimination of first notes following Sections (g) and (1), and the addition of new note following Rule 60; and modification of Paragraph (j-2) of Passenger Rule 7, to indicate definite requirements in connection with periodic attention to air brakes and to provide reference to air-brake pamphlets governing such work.

With the concurrence of the Lubrication Committee, elimination of note following present Section (k) and addition of new Section (k) of Rule 66-A, to indicate types of greases approved for lubrication of journal roller bearings; also modification of the last paragraph of Rule 85 to provide a one-month period of grace whereby handling line can return cars equipped with journal roller bearings to the owner in order to avoid responsibility for failure because of lubrication date being overdue.

Modification of Paragraph (1-b-3) of Section A of Rule 112, to clarify the intent with respect to transportation charges on damaged cars returned to owner.

Addition of new note following Section (h) of Passenger Rule 2 to expedite the installation of A.A.R. Standard passenger car axles to passenger equipment cars.

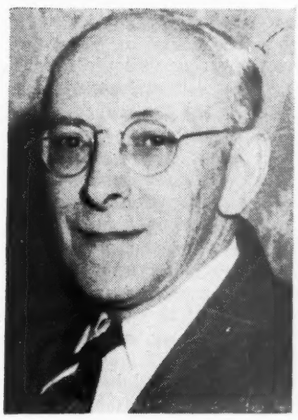
The committee did not feel that any of the modifications included in its report necessitated submission to letter ballot.

Members of the committee are J. A. Deppe (chairman), superintendent car department, Milwaukee; W. N. Messimer (vice-chairman), general superintendent of equipment, Merchants Despatch Transportation Corporation; H. M. Wood, assistant chief of motive power (car), Pennsylvania; R. M. Smith, vice-president, Union Tank Car Company; R. E. Baker, assistant general manager (mechanical), Boston & Maine; R. D. Bryan, mechanical assistant, Santa Fe; A. H. Gaebler, superintendent car department, General American Transportation Corporation; E. P. Stemshorn, assistant chief of car equipment, Canadian National.

(The report was accepted.)

PRICES FOR LABOR AND MATERIALS

Labor Rates



T. J. Boring

Immediately upon receipt of announcement of the 12½ cents increase in hourly wage rates paid to employees engaged in car repairs, all combination labor and material allowances in Rules 101, 107, 111 and Passenger Car Rules 21 and 22 were reviewed and the labor portion modified in Supplement No. 1 to the 1951 Code, effective April 1, 1951.

Item 92 in Rule 107, and items 19, 19-A and 20 in Passenger-Car Rule 21 covering labor rates were increased and these changes were announced in a circular letter issued by the secretary on March 3, 1951, effective as of March 1.

Upon receipt of announcement of a further increase of six cents in hourly wages paid to employees engaged in car repairs, all combination labor and material allowances in Rule 101 were reviewed. However, it was found that applying the six-cent increase resulted in only a small increase in the large majority of the items. No further modifications in this rule were recommended prior to the usual August 1 Supplement.

Following the wage increase, Item 92, Rule 107, covering freight-car labor, was increased to $3.10 per hour and key items in this rule modified accordingly. Items 19, 19A and 20 of Passenger Car Rule 21 were similarly modified. These changes were announced in a circular letter issued by the secretary on April 27, 1951, effective as of May 1, 1951.

Material Prices

Rule 101.—All miscellaneous material prices in Rule 101 were rechecked as of March 1, 1951, quotations submitted by the purchasing agents of the ten selected railroads, representing 39 per cent of total freight-car ownership in the United States and Canada, showing an upward trend in material markets as indicated by detail recommendations for revisions shown under this rule.

A new note is added following Item 1 to provide the basis for charges and credits for all sizes and designs of armored-type air hose. Item 115-A covering brake-beam safety chain is obsolete and is eliminated. A new note is added following Item 169-1 to provide charge for R. & R. of packing retainer devices on cars so stenciled when in connection with periodic repacking of journal boxes.

Rule 107.—A new Item 100-A is added to provide labor charge for packing retainer devices applied separately.

Rule 111.—Paragraph 1 is modified to indicate that release valves mentioned therein do not include AB Duplex reservoir release valve.

Rule 112.—Recommendations are made in this rule respecting reproduction pound prices of new freight cars of all classes, in order that Supplement of August 1, 1951, may reflect 1950 costs in lieu of figures shown in the present code. New prices recommended are based on the cost of 23,500 freight cars constructed during the year 1950. The last sentence of Par. 4 Sec. B is modified to indicate that Class XIH cars shall be settled for on a reproduction cost basis.

Passenger Car Rule 22.—Item 14-A is modified to clarify the intent that it applies to current from a d.c. line. New item 14-B and new note following are added to provide a charge for electric current on cars equipped with a.c. conversion apparatus.

Time studies are to be made by a special subcommittee covering periodic attention to AB and AB-1-B type and D-22 type air-brake equipment. When these studies are completed, and if results justify modification of existing allowances or the addition of new items, such changes or additions will be made.

Further studies are to be made covering periodic repacking of journal boxes, on passenger as well as freight equipment. If the results of this study justify modification of existing allowances, such changes as are necessary will be made.

A joint study is being made by a special subcommittee composed of members of the Committee on Prices for Labor and Materials and the Committee on Couplers and Draft Gears, to determine whether or not the present secondhand allowances and average credits for approved and non-approved types of friction draft gears, as specified in Interchange Rule 101, are equitable. If the result of this study indicates modifications are necessary, such changes will be made.

In view of the possibility under present labor contract arrangements of there being four changes each year on account of fluctuation in cost of living allowances, plus the regular scheduled issuance of supplements, it is felt that the Arbitration Committee should review this situation from a policy viewpoint and determine what should be done to cope with it with the least confusion.

It is the intent of the committee to investigate labor and material costs again in Ocober; if sufficient change develops, necessary revision will be made and inserted in the Rules effective January 1, 1952.

Where price change only is involved, the wording of many of the price items contained in this report has been abbreviated, in the interest of brevity and the reduction of unnecessary material.

The report was signed by Chairman T. J. Boring, general foreman, M. C. B. Clearing House, Pennsylvania; Vice-Chairman P. F. Spangler, superintendent car department, St. Louis-San Francisco; J. D. Rezner, superintendent car department, Burlington; L. B. George, assistant chief motive power and rolling stock, Canadian Pacific; G. J. Flanagan, general car inspector, New York Central; R. M. Smith, vice-president, Union Tank Car Company; A. H. Gaebler, superintendent car department, General American Transportation Corporation; L. R. Schierbecker, assistant superintendent car department, Illinois Central.

(The report of the committee was accepted.)

SANITATION PROGRESS

On completion of the sanitary research project, under the supervision of the Joint Committee on Railway Sanitation and under the direction of Dr. Abel Wolman, the positions of sanitary engineer, mechanical engineer and secretary were transferred to the central research laboratory at Chicago, the group being identified as the Office of Sanitary Research.

The "Final Report of the Railroad Members of the Joint Committee on Railway Sanitation," accompanied by a summary report of the development work carried on by the research project since January 1946, was submitted to Vice-President Aydelott on February 28, 1951. Copies are being referred to the General Committees of the Operating-Transportation, Mechanical, and Engineering Divisions for comment and recommendations as to further handling.

The committee lists four additional technical reports which have been distributed to the railroads. These are: No. 5, A Study of Passenger Traffic and Its Relation to Quantities of Toilet Wastes; No. 6, Bacteriological Studies of the Effects of Human Waste from Passenger-Carrying Cars on Railroad Right-of-Way; No. 7, Retention of Sewage Wastes from Railroad Passenger Cars, and No. 8, Disposal and Treatment Processes for Sewage Wastes from Railroad Passenger Cars.

The committee has reviewed with the U. S. Public Health Service a number of proposed changes in the Interstate Quarantine Regulations, a revised edition of which will soon be available. It has also cooperated with that service in the preparation of three new handbooks on Sanitation of Railroad Servicing Areas, Sanitation of Railway Passenger Car Construction, and Sanitation of Dining Cars in Operation. These will in due course supersede the Sanitation Manual for Land and Air Conveyances Operating in Interstate Traffic and A. A. R. Circulars M&S 133 and M&S 194.

Service test of the Sphincter Retention Valve applied to some of the toilet hopper chutes of a New York Central sleeping car continues, with no difficulties of consequence reported to date.

The members of the joint committee are as follows: Mechanical Division: E. P. Moses (chairman), engineer, car equipment, New York Central system; E. E. Chapman, mechanical assistant, Santa Fe; H. M. Wood, assistant chief of motive power car, Pennsylvania. Engineering Division: R. C. Bardwell, superintendent water supply, Chesapeake & Ohio; H. W. Van Hovenberg, engineer of tests and sanitation, St. Louis Southwestern; A. B. Pierce, engineer of water supply, Southern system. Medical & Surgical Section: Dr. R. M. Graham, director, department of sanitation and surgery, Pullman Company; Dr. A. M. W. Hursh, chief medical examiner, Pennsylvania. U. S. Public Health Service: Mark D. Hollis, assistant surgeon-general, chief sanitary engineering division; E. C. Garthe, sanitary engineering division, in charge land and air carrier division; C. H. Atkins, sanitary engineer, land and air carrier section. Department of National Health and Welfare, Canada: J. R. Menzies, chief, public health engineering division D. Secretary, H. S. Dewhurst.

(The report was accepted.)

CAR CONSTRUCTION

J. A. Gower

[The committee included in the report tables showing that of 93,677 new house and hopper cars ordered from May 1, 1950, to April 30, 1951, inclusive, all conformed to A.A.R. standards of design, throughout or conformed thereto essentially, except for variations in inside dimensions to meet specific conditions, including lightweight low-alloy steel cars, and cars with floating center sills (1,300 box cars). Of the 143,588 cars of the flat, gondola, hopper, refrigerator, stock and special types ordered during the same period, 136,172, or 94.8 per cent, have the standard 25¾-in. center-plate height.—EDITOR.]

New Freight-Car Designs.—In accordance with Interchange Rule 3 three new freight-car designs were rereviewed and approved for interchange service during the

year, as follows: Car structure for mounting two-unit glass-lined tanks of 7,800 gal. total capacity to be used in the transportation of chlorosulphonic acid, General American Transportation Corporation; a structure, including anchorage, to be used for transportation of 15 one-ton containers and contents, American Car & Foundry Co.; flat car, 50 tons capacity, Virginian.

Alternate Hopper-Car Bolster. — An improved bolster brace at the center sill, has overcome failures of the I-beam body bolster included in the "Victory" designs of 50-and 70-ton self-clearing hopper cars. It is recommended for adoption as an alternate standard. It saves approximately 300 lb. per car and is cheaper to fabricate and apply than the built-up construction.

Refrigeration Research.—Reports are made on the work accomplishd on standing and laboratory tests as well as on road tests of various aspects of refrigeration. A large part of the standing and laboratory tests have been directed to the use of salt and ice mixtures. These include tests of various percentages of salt and bunker ice, including the use of various types of mined and sea salt, some with inhibitors in the ice and salt mixtures, analysis of salt samples in use by car lines and carriers and a study of commodity temperatures using salts other than NaCl on bunker ice in shipments of frozen foods.

A report to the United Fresh Fruit & Vegetable Association Committee on Refrigerator Cars, looking toward the standardization of loading and unloading platform construction, was also mentioned. Road tests reported included a comparison of overhead bulkhead fans with floor fans on transcontinental tests, a comparison of standard refrigeration against a limited number of reicings, transcontinental tests on frozen food using various percentages and sizes of salt on bunker ice, and a test by the U. S. Department of Agriculture of the use of alcohol heaters in the transportation of bananas between New Orleans and Winnipeg, Man.

Work recommended for 1951 by the committees supervising these studies includes a series of individual car tests between Chicago and New York to develop new rules reducing ice issues; frozen food tests, using new equipment, for the use of legal departments before the Interstate Commerce Commission on truck hearings; ventilation tests on tomatoes in cars moving through changeable and cool weather, and on potatoes. Studies are now taking place looking toward frozen-foods tests with mechanical refrigeration and other new types of cars.

The question of insulation studies was deferred to the next general meeting. The refrigrator car research division has been instructed to study the absorption of water vapor by insulation.

Fire-Resistant Insulation.—Where heat is used in repair operations on refrigerator cars fires break out in certain insulating materials after the work has been done. The committee proposes for letter ballot determination that supplement to Manual Plate C-2, Specifications for Standard Freight Refrigerator Cars, be modified by the addition of the following to Item 9—Insulation: "Insulation used most be such that it will not support combustion which will include enveloping materials used in connection with blanket form insulation."

Pressed Steel Plywood Box Car.—Up to the present the Pressed Steel box car has satisfactorily passed the compression test. It is now being tested in freight service directly behind the locomotive on the Milwaukee in freight runs between Chicago and the Pacific northwest.

Freight Car Details.—Nailable Steel channel-type flooring is strong enough to be used with one 3-in. 6.7-lb. longitudinal floor stringer on each side of the center sill, with conventional crossties and crossbearings, if the steel floor sections are welded to the stringer. This is proposed for letter ballot action.

Damage caused by water dripping from car roofs at doorways, of which shippers of flour-mill and similar products complain, can be prevented at small cost in the construction of new cars or on rebuilt cars. Drawings covering the design of a water deflector for existing cars and for new cars have been prepared for inclusion in a revision of the Supplement to the Manual.

Changes in and additions to the drawings of standard steel-sheathed box cars in the Supplement to the Manual recommended by the committee last year because of changes in methods of loading and improvements in shop practices have been made. The major changes thus effected are: strengthened body bolsters; floor stringers continuous in one piece between bolsters; crosstie added at the center of the car on both 40- and 50-ton steel-sheathed box and auto-box cars; an alternate of six floor stringers desirable for cars subjected to heavy loads handled on lift trucks; alternate side-sill arrangement which permits the removal and replacement of floor boards without disturbing the inside lining; and floor boards of thickness increased as desired.

High-Speed Freight-Truck Study.—The committee includes a tabulation of the results of the 1950 road-test program in the cooperative freight car truck and snubber resarch project conducted on the Illinois Central with the American Steel Foundries five-car service laboratory. Report No. f3800 summarizing the results of all road tests conducted during 1948, 1949 and 1950 is in preparation by the Mechanical Division Research office. It will also include investigations of solid-type journal-bearing performance, a roller-bearing research program, lateral action of freight-car trucks, accelerometer calibration and side-frame stresses, and studies of vibration in freight cars.

Laboratory studies of life expectancy of the snubbing devices and constructions showing satisfactory performance during the three-year road-test program will be carried out at the A.A.R. draft-gear laboratory at Purdue University.

Side Frames and Bolsters.—During the past year 45 additional designs of truck side frames and 59 additional designs of truck bolsters have been approved and identification numbers assigned. Three additional side-frame patterns were approved under identification numbers previously assigned because the new patterns differ in no essential respect from those to which the numbers were originally assigned.

Changes have been made in the regulations governing applications for approval of side frames and bolsters. Two changes have been added to those which can be made in journal boxes under the approval of the base pattern design: (1) modifications in journal boxes to permit the use of cartridge-type roller-bearing units; and (2) change in the design of the journal box to provide a removable lower portion to facilitate wheel changing. The addition or removal of brackets for Creco double economy or Creco double equalized brake-beam safety guards and addition or removal of holes for brake-beam safety guard brackets for Buffalo, Grip Nut, Drexel, Creco double economy, or Creco double equalizer brackets, are included under the same provision with respect to bolsters. A change in side-bearing spacing within certain limits is also included. The revised regulations are recommended for inclusion, respectively, in truck bolster and truck side-frame specifications. This is proposed for letter-ballot action.

Helical Spring Tests.—Service life tests of helical springs instigated in 1945-46 by a sub-committee of the Car Construction Committee had run five years at the January 31, 1951, report. The test consisted of 100 car sets of A.A.R. 1936 1⅝-in.-travel springs (T-1); 100 car sets of proposed 1944 1⅝-in.-travel springs (T-2); 100 car sets, 2-in.-travel springs (T-3); 10 car sets, 2½-in.-travel springs (T-4). The essential results of these tests are shown in the table.

Spring Failures During the Five-Year Test of Railway Springs for Freight Cars

	T-1	T-2	T-3	T-4
Total failures:				
Outer coil	78	238	348	31
Inner coil	12	4	15	5
Cars still in service	93	83	82	10
Outer coil failures per 100 coils initially installed	4.87	14.87	17.40	19.37
Failure index with T-1 failures as unity	1	3.05	3.57	3.97

Service Test of Brake Beams.—The 1949 and 1950 reports of the Car Construction Committee refer to a number of brake beams which have been applied on various cars for road service tests. These beams were designs by the brake-beam manufacturers' mechanical committee and represented both the Unit type and brake-

hanger type.* Periodical inspection of these beams will be continued. The progress of the tests after approximately three years of service is as follows:

Brake-beam designation	A.A.R. No. 3	101	102	103	104	105	501	502	503
No. of beams applied	48	48	48	48	48	48	24	46	22
No of beams removed since beginning of test due to failure of beam	1	4	2	3	12	2	0	1	0

Certified Brake-Beam Repair Specification.—The committee has prepared a set of specifications proposed for the repairs to certified brake beams for freight cars which it recommends for submission to letter ballot. The specification covers dismantling, inspection and reconditioning of parts, assembly, testing, and marking.

Brake Beams for Special Freight Cars.—All applications from manufacturers for approval of brake beams for application to cars of special construction on which standard beams cannot be used are to be submitted to the secretary's office to be passed on by the subcommittee on brake beams for approval. If approved, a certificate number will be assigned and all tests waived where the design is similar to designs already approved. Provisions for making the beams are also specified.

Stenciling for Special Equipment on Refrigerator Cars.—Operating men find it difficult to read stenciling on refrigerator cars for special equipment such as fans, stage icing, convertible bunkers, etc., in the upper left-hand corner of the car. The committee proposes for letter-ballot action that Manual page L-39-B be revised to show special stenciling to the left of the car number.

Strength of Car Floors.—There is still a large railroad ownership of box cars having 1¾-in. wood flooring with only one longitudinal floor support between the side sill and center sill; numerous other cars with one floor stringer and 2¼-in. or 2⅜-in. wood flooring; and many cars have the present standard A.A.R. floor consisting of 1¾-in. flooring with two longitudinal floor stringers on each side of the center sill. All these combinations have been found lacking in sufficient strength for present-day heavy loading practices.

Various expedients have been advanced temporarily to correct these deficiencies. Some car owners have laid an auxiliary ¾-in. floor diagonally over the top of the present 1¾-in. floor. An additional floor stringer has been added, making two on each side of the center sill. In the case of the car with the 2¼-in. or 2⅜-in. floor, this has merit, but with the 1¾-in. floor it still does not create a trouble-free floor. The addition of a perforated steel plate, extending from door to door, has materially improved the condition at the doorways where most of the damage occurs, but it is not the final answer.

Special steel channel floors, although affording relief from ordinary floor weakness, are quite expensive. A wood floor over stringers should last at least five years; the life of the steel or combination of wood and steel should be over twice that; but the price is many times that of the wood floor.

Many tests were conducted at the plant of the Pullman-Standard Car Manufacturing Company on the strength of different combinations of wood floor thickness and steel floor stringers. These proved to be erratic. For subsequent tests the fixture on which the test floors were mounted was rebuilt with underframe members spaced more realistically to represent the actual dimensions of a box car. The loads were applied in the direction that would occur on the car. By that is meant on the short 3-ft. span the wheel load was placed parallel to the length of the floor board such as would take place in the doorway of a car. In the panels where the cross-members were spaced 4 ft. apart, the wheel load was applied longitudinally of the car as if a lift truck were running between the crossbearer and the bolster.

The following basic facts are presented as a result of the tests conducted and calculations made: (1) The use of fir flooring versus yellow pine (based at 100 per cent) reduces lumber strength to 73 per cent; (2) the use of fir flooring versus yellow pine reduces floor stringer strength to 99 per cent; (3) the use of high-strength steel (similar section and strength as open-hearth but reduced thickness) versus open-hearth steel reduces lumber strength to 75 per cent; (4) the use of high-strength steel (similar section and strength as open-hearth but reduced thickness) versus open-hearth steel maintains stringer strength at 100 per cent; (5) the use of high-strength steel versus open-hearth steel (equal sections) floor stringers keeps lumber strength at 100 per cent; (6) the use of high-strength steel versus open-hearth steel (equal sections) floor stringers increases stringer strength to 164 per cent; (7) non-continuous stringers versus continuous stringers reduces stringer strength to 64 per cent; (8) non-continuous stringers versus continuous stringers reduces lumber strength to 56 per cent; (9) removing crosstie at center line of car reduces stringer strength to 64 per cent; and (10) removing crosstie at center of car reduces lumber strength to 69 per cent.

From the data submitted, it is apparent that flooring of substantial strength is obtained with a 2⅜-in. wood floor laid on four 3-in. 6-7-lb. floor stringers (two each side of center sill) for an approximate additional expenditure over standard A.A.R. construction of $67 per car set. Several railroads are using four 4-in. 8.2-lb. Z floor stringers (two each side of center sill) to further increase floor strength.

Welding Cast Steel.—A procedure for welding high-tensile steel castings has been approved by the Committee on Car Construction and the Committee on Couplers and Draft Gears. The joint subcommittee has prepared specific suggestions for modifications of coupler specifications and reclamation practices shown in Sec. C of the Manual and recommends, for submission to letter ballot, that a new Sec. D be added to the fusion welding and bronze welding limits and regulations (Manual pages L-3 to L-8F and Interchange Rule 3).

Passenger-Car Designations.—The committee has reviewed the classifications for passenger cars shown in Section L of the Manual and considered changes recommended by the American Railway Car Institute. It recommends for submission to letter ballot changes in the designations and definitions of passenger-train cars to eliminate portions pertaining to equipment no longer in use and to simplify definitions.

Insect Infestation of Box Cars.—The railroads have been requested to improve their car inspection and cleaning programs to comply with recommended standards for openings at bottom of side linings of box cars, for removal of debris and infestation from behind end linings of box cars and to consider possible redesign of box cars to eliminate spaces behind linings which are not self clearing. Information developed by a questionnaire sent to member roads by the Mechanical Division has been made available to the joint subcommittee. This includes various methods employed by individual railroads to deal with infestation of box cars, particularly as to the use of Fiberglas and other materials behind end linings.

The Car Construction Committee is of the opinion that an opening should be left at top and bottom of side lining so that the space behind it can be thoroughly cleaned. The top lining board should be left open only where there is a clear opening from top to bottom between the inside lining and outside lining. The subject is still under active consideration.

A total of 10 recommendations for submission to letter ballot are included in the report.

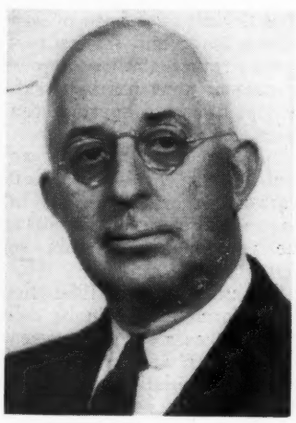
The members of the committee are J. A. Gower (chairman), assistant mechanical engineer, Pennsylvania; R. B. Winship, mechanical engineer, Canadian National; J. McMullen, consulting engineer, Erie; R. D. Bryan, mechanical assistant, Santa Fe; R. H. Graff, assistant engineer, car equipment, New York Central system; F. J. Herter, engineer car construction, Chesapeake & Ohio; H. L. Holland, assistant mechanical engineer, Baltimore & Ohio; N. A. Passur, engineer car construction, Southern Pacific; M. C. Haber, general mechanical engineer, Union Pacific; F. G. Moody, superintendent car department, Northern Pacific; K. H. Carpenter, superintendent car department, Lackawanna; W. A. Pownall, assistant to general superintendent motive power, Wabash; W. F. Kascal, mechanical superintendent, Texas & Pacific.

*These beams are described in the 1949 committee report.

H. D. Fenske, assistant vice-president, Great Lakes Steel Corporation, in commenting on the freight-car-floor tests reported by the committee, said that these are static load tests and are not representative of the dynamic loads which car floors receive in service. Last summer, he said, dynamic tests were made at Altoona, Pa., by the Pennsylvania, and he suggested that the committee make dynamic tests of its own. He said that the cost and expense of car floors are relative and that the comparative economics of the steel and wood floors must be determined by a comparison of the total cost over the life of the car.

Cyrus J. Holland, president, Holland Company, said that the truck tests which were conducted by the committee during 1948, '49 and '50 have shown the necessity for long-travel springs. He reviewed the history of A.A.R. spring developments, including the 1915 standard 1-11/16-in. travel spring; the 1936 spring with 1-5/8 in. travel; the 2½-in. travel spring, and the 3-1/16-in. travel spring of 1947, and the 3-11/16-in. travel spring of 1948. Thus, he pointed out, there are in use today five different designs of outer and five different designs of inner coil. This, he thought, should be simplified. He briefly described the Holland Constant Effective Static Deflection spring. This is a spring, the outer coil of which is made of a specially tapered bar with which is used a conventional inner coil helical spring. This spring, he said, will carry any load from empty to fully loaded car. With it, he said, it would be unnecessary to have special cars assigned to high-speed merchandise service with lighter capacity spring groups. This spring, he said, was tested in the 1950 road tests of the Cooperative Freight Car and Snubber Research program on several runs which demonstrated that it gave a satisfactory ride for the 169,000-lb. load up to 65 m.p.h., the 145,000-lb. load up to 90 m.p.h., and gave the lowest number of .5G and .75G shocks under the light load up to 90 m.p.h. of any comparable tests. Mr. Holland suggested that the subcommittee on springs investigate the benefits that could be attained by the use of this spring, which, he said, can be used in place of the present standard springs for reducing the number of spring designs needed.

TANK CARS



J. E. Keegan

During the past year, the Committee on Tank Cars gave consideration to a total of 480 dockets and applications for approval of designs. Of these, 243 covered 6,941 new shipping containers for mounting on new cars or for replacement on existing cars.

Two applications covered the construction of 17 multiple-unit cars to be used for transportation of 15 Class ICC-106A500 or ICC-106A500-X type one-ton containers each. One application covered the construction of three new underframes for the application of existing trucks and the mounting of existing Class ARA-V tanks.

Applications covering alterations in, additions to, or conversions and reconditioning of 2,626 existing tank cars or shipping containers totaled 208. Eighteen applications requested approval of tank-car appurtenance designs or materials without reference to specific cars.

Upon recommendation of the committee, concurred in by the I.C.C. Bureau of Explosives on September 12, 1949, Special Permit No. 504 was issued authorizing the equipping of two Class ICC 103-B tank-car tanks and their appurtenances with Q-187 Saran rubber lining for service trials in the transportation of hydrochloric acid. Upon further recommendation of the committee, concurred in by the Bureau of Explosives and following the satisfactory completion of 18 trips by the two tank cars so equipped, the commission, by issuance of revised special permit No. 504 dated June 27, 1950, extended the authorization to 25 additional Class ICC-103-B or ICC-103B-W tank cars.

Upon recommendation of the committee, concurred in by the Bureau of Explosives, the Commission, by suitable orders dated August 29 and November 13, 1950, amended its tank-car tank specifications, as follows:

Class 103-C, Par. 6(a)—For computing rivet areas the effective diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 in. All rivets must be driven hot.

Class 106A800, Par. 14(b)—When longitudinal seam is water-gas lap-welded, the mark must be ICC-106A800. When longitudinal seam is fusion-welded, the mark must be ICC-106A800X.

Class 103A-W, Par. 14(a)—Safety valves prohibited but a safety vent must be applied. Sulfuric acid, except oleum, mixed acid (nitric and sulfuric acid) (nitrating acid), and other fuming acids, may be transported in Spec. 103A-W tank cars having safety vents equipped with lead discs having ⅛-in. breather holes in the center thereof.

Upon recommendation of the Committee on Tank Cars, the General Committee approved revision of the A.A.R. Specifications for Tank Cars, to read as follows: Spec. Class ICC-103-W, 103A-W, 103B-W, 104-W, 104A-W, 105A300-W, 105A400-W, 105A500-W and 105A600-W, Par. AAR-3(a):

AAR-3(a) All plates used for tank and expansion dome, where expansion dome is required, must be of open-hearth boiler-plate steel of flange quality complying with requirements of current A.A.R. Spec. M-115, or A.S.T.M. Spec. A-201, A-212, A-285 with the carbon content of the plates used not to exceed 0.30 per cent. These plates may also be clad with other metals, such as nickel, etc.

A.A.R.-13(c) For outlet nozzles that project 6 in. or more from shell of tank a V-groove must be cut (not cast) in the upper part of the outlet valve nozzle at a point immediately below the lowest part of the valve to a depth that will leave the thickness of the nozzle wall at the root of the vee not over ⅜ in. In the case of steam-jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of the center sill construction. Where the nozzle is not a single piece, arrangements must be made to provide the equivalent of the breakage groove.

AAR-9(b) The manhole in the dome head must be of sufficient diameter to permit access to the interior of the tank. The opening in the tank shell must be at least 29 in. in diameter and when the opening in the tank shell exceeds 30 in. in diameter the opening must be reinforced in an approved manner.

The report was signed by Chairman J. E. Keegan, chief car inspector, Pennsylvania; F. J. Harris, mechanical engineer (car) Canadian National; J. R. Hayden, superintendent car department, Missouri-Kansas-Texas; H. S. Marsh, superintendent car department, Missouri Pacific; N. A. Passur, engineer car construction, Southern Pacific; R. S. Venning, special engineer, Chesapeake & Ohio; R. M. Smith, vice-president, Union Tank Car Company; R. T. Baldwin, secretary, the Chlorine Institute; J. M. Dahlem, master car builder, Mid-Continent Petroleum Corporation; R. W. Thomas, manager, research and development, Phillips Petroleum Company; and T. H. Caldwell, maintenance superintendent, Dow Chemical Company.

Discussion

R. H. Smith, vice-president, Union Tank Car Company, called attention to the fact that all but 38 of the 6,941 new shipping containers were of fusion-welded construction and complimented the committee on developing designs and specifications which assure the success of this radically new method of fabrication. He said that the first welded tank-car tank was built in 1932 and this type of construction was approved by the I.C.C. in 1941.

(The report was accepted.)

LUBRICATION OF CARS AND LOCOMOTIVES

R. E. Coughlan

It has been decided that until it may be possible to formulate an A.A.R. specification for journal roller-bearing greases, it would be entirely consistent to approve certain greases which meet specified requirements considered nessessary by your committee and which would pass compatibility tests. On this basis, the following greases have been approved: Lubrico M-1, Special, the Master Lubricants Company; H-927 Non-Fluid Oil, the New York & New Jersey Lubricant Co.; No. 979 Roller Bearing Grease, the Texas Company.

Recommendation has been forwarded to the Arbitration Committee to eliminate the present note following Sec. (k), Interchange Rule 66-A and, in lieu thereof, include the current list of approved greases for lubricating journal roller bearings.

Meetings have been held with representatives of the various oil companies and journal roller-bearing manufacturers and a working committee has now been formulated to study this entire matter, which has been designated "Joint Committee on Lubricating Greases for Railroad Antifriction Journal Bearings."

Briefly, the scope of activities to be undertaken by the new joint committee will be a complete survey of railroad antifriction journal-bearing lubrication problems and development of methods for selecting and evaluating laboratory tests which may be used to predict performance characteristics of lubricants for this purpose. In this development, laboratory tests and service experience will be the prime factors in considering various types of greases for approval.

The three groups represented in these joint studies are the National Lubricating Grease Institute, the Anti-Friction Bearing Manufacturers' Association and a subcommittee representing the A.A.R. Committee on Lubrication of Cars and Locomotives.

In reply to one company requesting approval of greases, it was agreed that such greases should be subjected to laboratory tests under the jurisdiction of the mechanical engineer of the division, covering general specifications, oil properties, oxidation inhibitor, grease requirements, color, stability and compatibility.

Journal-Box-Lids.—Since the last annual meeting, the Joint Subcommittee on Journal-Box Lids has recommended that certificates of approval be granted for seven lids of the 5-in. by 9-in. and 5½-in. by 10-in. sizes, and 5 lids of the 6-in. by 11-in. size. Certificates have been granted and the lids shown in the list of Approved Journal Box Lids issued periodically by the secretary. Of these 12 lids, changes were required in 3 before approvals were granted.

Six requests for minor changes in design under existing certificates were granted. Two similar requests were rejected as the changes requested were such that parts manufactured under the new drawings would not be interchangeable with parts manufactured under drawings included in the original certificate of approval.

The subcommittee is also active in an effort to have lid manufacturers submit lids in the 6½-in. by 12-in. size for approval in order that member roads may comply with Interchange Rule 3, Sec. j (3), which reads as follows: "Journal-box lids complying with A.A.R. Specifications for Journal-Box Lids as revised in 1947 and having A.A.R. Certificate of Approval are required on all cars built new or rebuilt after January 1950, from owners."

Investigation is under way of failure of lids in service. When this investigation is completed recommendations will be made to the Specifications Committee covering such changes in Specification M-120 as the joint subcommittee feels necessary to eliminate these failures.

At a meeting on June 22, 1949, the committee agreed to conduct a series of vibration tests on journal-box lids to obtain information on the relative wear of the lid eyes, hinge pins and the holes and lug faces of the box.

The results of the tests indicate that if hinge-pin holes in the lugs are kept bushed to proper size and lugs kept to proper dimensions by renewable wear plates and proper lid-spring tension maintained there will be no excessive wear on the hinge-pin hole of pressed-steel lids or any other approved type lid.

Tests of Journal-Box Closures.—Service tests of various combinations of journal-box closures have been continuing. One road which is testing 50 cars having the front face of the journal box planed smooth, journal-box hinge lugs in good condition and journal box equipped with deep-flange lid, reports that from the time of such installations in September 1949 until February 9, 1951 (date of reporting), no hot boxes have been experienced on any of these cars. In addition, an analysis of the waste in these boxes was made on three different occasions during this period and the highest moisture content was 1.84 per cent and the highest impurities content was 1.24 per cent. On the basis of this performance, a suggestion was before the committee to recommend a requirement that the front face of journal boxes on all cars built new be planed smooth and that the hinge lug be equipped with wear plates both on the face and in the hinge-pin hole.

This recommendation was given due consideration, but your committee feels that with close checking at the manufacturing plants, truck sides with integral journal boxes, or separable boxes, can be obtained with face within the present tolerances of 1/32 in., or even closer, which are considered satisfactory for freight service.

The following packing-retainer devices have been approved for roads desiring to use them: Hold-Rite packing retainer NP-8, 9 and 10, 11 and 12, Spring Packing Company; Modern Packing Keeper 8-9-10-11-12, Modern Railway Devices Company; Union waste retainer 9 and 10, 11, Union Spring & Manufacturing Co.; Flex-Pak package-type waste container, 5 in. by 9 in., 5½ in. by 10 in., 6 in. by 11 in., the Hudson Company.

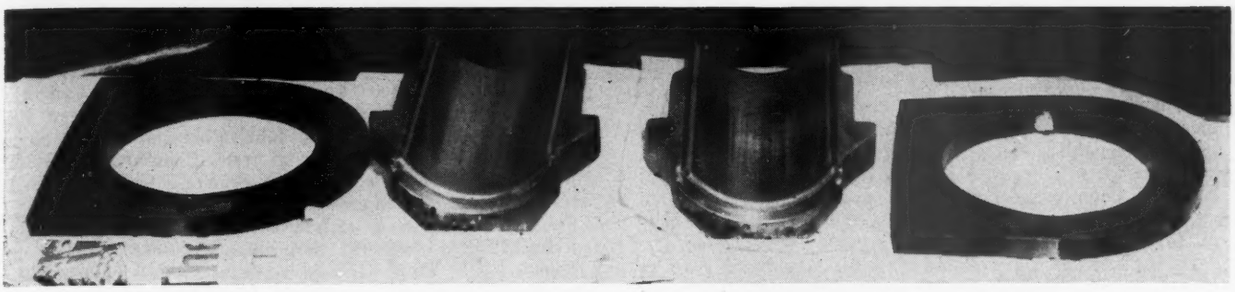
Other types of packing retainer devices have been offered for approval, inspections have been made and service performance observed in some cases by representatives of your committee. However, up to the present none has been sufficiently developed or tested to a point where approval can be granted.

Quite a number of installations have been made by an eastern railroad of the so-called "Hogan Anti-Waste Roll Ledge." The committee has arranged for inspections to be made of such installations and also to obtain data, where possible, regarding the performance of cars so equipped.

Hot-Box Statistics.—Effective July 1, 1950, the General Committee directed that information again be collected covering the number of freight cars set off between division terminals because of hot boxes, and the number of miles run per hot box set off. The tabulation of this information again was considered necessary because of the number of hot boxes occurring last summer.

While the committee feels this basis will not permit consistent comparison between a high-speed, multiple-track railroad and a slower-speed light-traffic railroad, it will nevertheless afford a basis of comparison by each railroad with its own former performance and stimulate action for improvement by roads which might not have as good a performance as previously. The reporting form has been modified, however, so as to require the least amount of data from the reporting roads necessary for this report.

Brief progress reports covering laboratory studies of journal-box lubricating materials appeared in the 1949 and 1950 annual reports of the committee. Last year's report summarized the first two progress reports, as issued by the Mechanical Research Office. During the past year



Journal bearings and Axle-Stop dust guards which have been in service approximately 175,984 miles. Linings of journal bearings show no indication of distortion. Dust guards show no signs of wear, the opening being 6⅜ in. horizontally and vertically

four additional progress reports have been published.

During the year a series of colored motion pictures were taken to record waste-pack displacements within the journal box after overnight freezing down at the —15 deg. F temperature range. These motion pictures, covering a wide range of waste-pack combinations, serve as a most valuable part of the research program completed during the calendar year 1950 at the Indianapolis Lubrication Laboratory.

The Mechanical Inspection Department has been directed to obtain samples of journal-box packing in use by the railroads, private car owners, car builders and contract repair shops, and to arrange for the necessary laboratory analyses to determine if packing meets all the requirements of the specifications.

Axle Stop Dust Guard.—A device known as the Axle Stop Dust Guard is intended to prevent unseating the journal bearing from the journal of freight or passenger cars or locomotive tenders, through rough switching or application of brakes. The committee has agreed to observe the performance of this device which has been installed in cars and locomotives of certain roads represented on the committee.

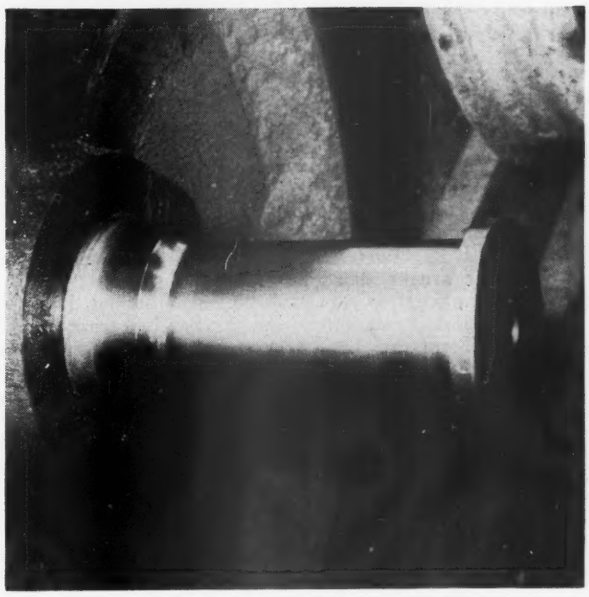
The present device being tested is in the form of an oil-resistant neoprene rubber dust guard with steel inserts on either side opposite the center of the axle, and the dust guard is of sufficient width to allow only about 1/16 in. travel of axle. This is not sufficient to unseat the journal bearing. Under heavy braking, the axle turns against the steel block, or insert, allowing the bearing to ride in its full seat.

On the basis of the information and experience established up to the present, the principle involved in this device appears to have possibilities which may eliminate some of the causes of lubrication failures. If and when additional installations are made by interested roads, however, more experience in connection with the use of this device can be obtained.

Cotton Fabric Dust Guards.—Under date of October 19, 1950, the U. S. Department of Agriculture advised that one of its research laboratories had developed a means for weaving an abnormally dense cotton fabric and that a number of thicknesses of this type fabric had been fabricated into a dust guard which might be acceptable as an alternate for present designs of dust guards in service.

Test samples were obtained of these cotton fabric dust guards and submitted to laboratory tests, three of the guards having the plies stitched together and three stapled with rust-resistant staples. Tests showed that both guards mushroomed at the axle opening, and the staple guard buckled at the corner and would have eventually turned around in the pocket. Both guards show indications of fraying out at the axle opening, and the danger of the cotton strands becoming loose and entering the journal box is very apparent. This is receiving further consideration by the committee.

Mention was made of the National Dust Deflector Housings in the 1950 report of this committee. Trucks having National Dust Deflector Housings have now been installed in Merchants Despatch Transportation Corporation cars Nos. 10990 to 10999, inclusive. These cars were assigned to banana service. Shipments ordinarily originate at New Orleans on the Illinois Central and are shipped to various destinations, mostly in midwest territory.



The rust guard seat on this axle appears to have slightly built-up metal from steel inserts of the Axle Stop dust guard but is not scored

Journal bearings removed from baggage car equipped with standard wood dust guards. Note run linings and double contact

The committee has made arrangements to conduct periodic inspection of such devices under these cars. It is anticipated that some difficulties may be experienced in locating the cars for inspection purposes at certain intervals; the committee will appreciate advice from member roads handling such equipment as to the service performance being experienced from time to time.

A.A.R. Lubrication Manual.—The A.A.R. Lubrication Manual was adopted as standard in 1949 and became effective on January 1, 1950. Like all new publications re-

garding rules, standards and recommended practices, the first edition was by no means perfect. It was, however, a start in a matter of extreme importance to all railroads and all car owners.

A thorough revision has been proposed and after further consideration is given to this matter jointly by the Lubrication and Arbitration Committees, it is quite certain that we will have an improved publication which will be more definite insofar as standard details and recommended details are concerned, and which will be more useful to the railroads and the private car owners.

During the year, in collaboration with the Solid Bearing Manufacturers' Technical Advisory Committee, the subcommittee has carried out the authorized plan of conducting road tests of bearing design modifications, to be used in association with axles with and without end collars. A two-weeks' program, utilizing the American Steel Foundries Five-car service laboratory, operated as a special train over Illinois Central rails between Clinton and Gillman, Ill., was underwritten by the Magnus Metal Corporation and the National Bearing Division, American Brake Shoe Company. The results of this road testing research program have been published by the Mechanical Research Office in two reports, as follows: Report No. f3000—Investigation of Railway Equipment Journal Bearing Performance, dated December 15, 1950; report No. f4000—Lateral Action of Freight Car Trucks, dated December 28, 1950.

These two progress reports have been distributed to the several interested committees and the Solid Bearing Manufacturers' Technical Advisory Group as information, but to date have not been generally distributed.

Iron-Back Journal Bearings.—As indicated in several circular letters issued by the secretary of the Mechanical Division, a new type of journal bearing has been developed, designated the "Laudig" iron-back journal bearing. The purpose intended for this new type of journal bearing is to lessen the possibilities of journal failures caused by hot boxes.

Approval for service tests of 100 cars equipped with "Laudig" iron-back journal bearings in interchange service has been authorized, and total installations had been made to 87 cars at the time this report was printed.

Complete instructions with respect to the road service tests of these journal bearings are contained in circular letter issued November 30, 1950, by the secretary of the Mechanical Division.

A few of the test bearings have already been removed and arrangements made for investigation of the circumstances surrounding each case as well as examination and analysis of these bearings.

Journal-Lubricating Device.—Essential details of the Empire journal lubricator are shown in a drawing. This design employs a pair of ball-bearing rollers (oil impervious composition) held against the bottom of the journal through spring tension (piana wire) to replace the conventional waste-pack. The rollers provide semi-bath mechanical lubrication. An oil seal of composition material to withstand the action of oil takes the place of the conventional dust guard.

Laboratory tests of this device have been made at the Indianapolis Lubrication Laboratory under the jurisdiction of the A.A.R. Mechanical Engineer and a report with respect to same has been furnished to your committee. The laboratory tests indicated that this lubricator can be rated as a satisfactory device for the lubrication of conventional railway solid journal bearings.

The committee has decided that road service tests of a sufficient number of these lubricators should be conducted to establish the mechanical reliability and overall economics of this device as a basis for possible future approval of its use under cars in interchange service.

Installations have been made in different types of cars on six railroads and representatives of the committee have arranged to make periodic inspections of such installations from time to time to determine their service performance. Up to the present time, however, no definite recommendations with respect to this device have been offered by the committee.

The report was signed by Chairman R. E. Coughlan, chief metallurgist and engineer tests, Chicago & North Western, E. H. Jenkins (vice-chairman), assistant general superintendent car equipment, western region, Canadian National; A. J. Pichetto, general air brake engineer, Illinois Central; D. C. Davis, lubrication supervisor, Santa Fe; M. A. Pinney, engineer of tests, Pennsylvania; H. T. Rockwell, assistant engineer, New York Central; M. A. Hansen, engineer of research, Gulf, Mobile & Ohio; F. Fahland, research & standards engineer, Union Pacific; Robert Schey, general superintendent car department, Nickel Plate; L. N. Griffith, assistant mechanical engineer, Southern Pacific; W. R. Petry, chemist, Great Northern.

Discussion

G. R. Andersen, superintendent car department, C. & N. W., said that his road was planning for a lubrication test in which one half of the journal boxes of 100 hopper cars will be lubricated with a low-viscosity oil of high film strength and the other half of the journal boxes will be lubricated with the regular oil. These cars will be retained on the home line.

During the meeting several members, speaking on this and other reports, referred to the necessity of strict observance of the rules with respect to attention to journal bearings and journal boxes. Failures to do this were emphasized as one of the causes of recurring hot-box troubles.

AXLE AND CRANK PIN RESEARCH

This report is the first made by the committee since it was formed in 1949 by consolidation of the former Committee on Axle Research and the Committee on Crank Pin Research.

Passenger Car Axle Tests.—The eighth progress report covering fatigue testing of quenched and tempered 5½-in. by 10-in. carbon steel axles at the Timken Roller Bearing Company's laboratory was approved by the committee and issued by the Mechanical Research office in February 1950.

Locomotive Crank Pin Tests.—The 4th progress report covering tests of normalized and tempered and quenched and tempered crank pins at the Timken laboratory has been approved by the General Committee and distributed to the membership.

Current Committee Assignments. — In addition to the following list of assignments the committee has reviewed drafts of the preliminary ninth progress report on passenger-car axle tests and a supplement to the fourth progress report on crank-pin fatigue tests. The status of the committee assignments is:

1. The development of a new design of freight-car axle, following the general dimensions of the raised-wheel-seat standard axle for passenger cars, with an "as forged" surface between the wheel seats instead of a machined surface. In collaboration with the American Iron & Steel Institute's Committee on Axles and Locomotive Forgings two lots of 5½-in. by 10-in. axle forgings have been produced. These experimental forgings are at the Timken laboratory for comparative tests with Design No. 1 (A.A.R. 1928 standard freight car axle) and Design No. 6 (A.A.R. standard passenger car axle.)

2. Laboratory investigations of overheated journals did not support the claim that axle failures classified as burned-off journals were due to the progression of cracks resulting from service stresses. Because of the importance of the subject the committee decided to initiate a test program to investigate service stresses in the journal area.

3. A table showing the capacity in pounds of axles under cars in BX (box express) service, based on a 72-in. center of gravity and 33-in. wheels, has been approved and submitted to the Committee on Car Construction. If concurred in, the table will be submitted as a letter ballot item for inclusion in the next Wheel and Axle Manual supplement.

4. Studies of "as forged" axles are being made in collaboration with the A.I.S.I. committee. It is proposed to use a dynamic balancing machine to measure the unbalance of axles having variations in "run out" at the center of the axles.

5. Tests are in process of M-101 axles as forged, and stress relieved.

6. On the basis of questionnaire returns the committee decided that additional tests of axles with generator pulleys are not desirable or necessary.

7. Tubular axle designs with increased wheel-seat diameter submitted by the manufacturer are being studied.

8. Committee recommendation on axle capacity ratings when used in tender service was concurred in by the Locomotive Construction Committee and approved by the General Committee for publication as recommended practice.

9. The committee recommendation on design, finishing instructions and application procedure for locomotive crank pins and wheel centers, with the report covering recommended practice to be followed in making fits with prestressed bores and rolled wheel fits, was concurred in by the Locomotive Construction Committee for adoption as recommended practice.

10. The axle journal (two-step diameter) for roller bearing application to freight car truck side frames of integral box type was approved by the committee for engineering design.

11. A program of laboratory tests on the development of fatigue cracks between wheel seats and covering a dynamic investigation of roller bearing passenger axles at high speeds is being studied.

12. Protective surface coating for the body portion of axles, proposed by a committee member, is being studied.

13. An investigation is being made of reports of tubular axle failures received from member roads.

The members of the committee are J. R. Jackson (chairman), mechanical engineer, Mechanical Division, A.A.R.; K. Cartwright, chief mechanical officer, New Haven; W. F. Collins, engineer of tests, New York Central system; H. L. Decker, assistant mechanical engineer, Pennsylvania; H. H. Haupt, general superintendent motive power, Pennsylvania; F. J. Herter, engineer car construction, Chesapeake & Ohio; A. M. Johnson, assistant chief engineer equipment, New York Central system, and E. H. Weston, mechanical engineer, Chicago & North Western.

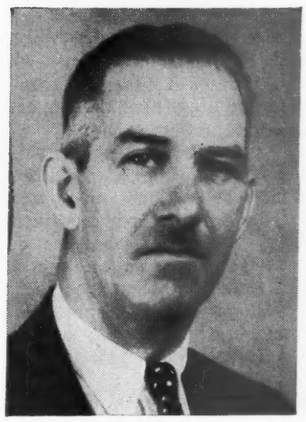
Discussion

The discussion centered chiefly on broken journals and the causes. The committee stated that their study concerned service stresses in the journal area, and they did not consider failures due to copper infiltration. It was hoped that the study can be continued with the hot-box alarm machine at Altoona as it can be used without modification. The committee hoped to test full, 1¼ and 1⅓ loads at 50, 75 and 100 m.p.h., using 5½-in. by 10-in. journals on 33-in. wheels. One 5-in. by 9-in. journal will also be tested, and the lubrication will be reduced at full load and 75 m.p.h. to investigate the heating and stresses.

Several roads reported experiences with journal failures. One found that about half showed no evidence of being caused by overheating. What heating was found was thought to have been caused by flexure after a fatigue crack had weakened the section. Another road found that 22 burned-off journals showed evidence of overheating in all cases, and there was copper penetration. A third road subscribed to the theory of copper penetration as being one of the main causes of burned-off journals; only one per cent breaking with no signs of heating.

The D. L. & W. ran a test on a loaded 70-ton hopper car to verify laboratory work on copper infiltration. A copper-free bearing ran red hot for 67 miles and was still intact. Lubrication was then removed from under a bronze bearing, and it burned off in 34 miles. The conclusion was that failure occurs two-thirds of the way from the axle collar where maximum heating occurs. Therefore stresses are not considered. The journal breaks where it is in contact with copper.

LOADING RULES



W. B. Moir

The first part of this report included general statements concerning the work of the committee with respect to loading military equipment, and in connection with the publications of the rules in pamphlet form.

With the opening of hostilities in Korea, the Army-Navy Special Supplement No. 1, covering the loading of mechanized and motorized equipment and major caliber guns, accompanied by and under direct supervision of military personnel, was reissued October 1950, at the request of the railroads and the Department of Defense. The Army-Navy Special Supplement No. 2, covering the loading of military vehicles and major caliber guns not transported in complete trains or accompanied by department of defense personnel, was issued in January 1951. This supplement, which was revised in joint agreement with the Loading Rules Committee of the Military Traffic Service, Department of Defense, contains figures and specifications for all new equipment which has been brought to the attention of the Loading Rules Committee.

Sponsored by the Military Traffic Service of the Department of Defense and conducted jointly by the Departments of the Army, Navy, and Air Force and the A.A.R., a series of three-day seminars on sound loading and bracing methods to prevent loss or damage to vitual equipment and war material, have just recently been completed. The seminars were developed by the Loading Rules Committee of the Military Traffic Service under the chairmanship of Francis X. Dunleavy, assistant deputy director of military traffic service, in coordination with the A.A.R.

At the request of the Ordnance Departmnt of the U. S. Army, a member of the Loading Rules Committee and a representative of the Freight Loading and Container Section of the A.A.R. made visits to the Rossford Ordnance Depot, Toledo, Ohio, to present a program on open and closed car loading at their school on Packaging, bracing and blocking. This matter has now been delegated to two representatives of the depot who were given instructions on both open and closed carloading by members of the committee and the Freight Loading and Container Section.

As stated at the 1950 meeting, all publications of the Loading Rules will be in pamphlet form. The following pamphlets have been issued to date: Grading and Road Making Machinery; Steel Products, excluding Pipe; Machinery; Pipe; and Miscellaneous Commodities.

All forest products have been included in a separate pamphlet recently issued by the Special Committee on Forest Products Loading.

Difficulties experienced on shipments of tractors, particularly the cross-wise loading method, has resulted in recommendations for improvements in methods for loading tractors. These recommendations have now been sent to the Farm Equipment Institute for concurrence and will be included in the pamphlet covering Farm Equipment Machinery, if approved. The balance of the figures to be included in this pamphlet are now being prepared by the subcommittee. Several joint meetings have been held with the Farm Equipment Institute to progress the preparation of the specifications and drawings of the farm machinery to be included in this pamphlet. It is expected that the approved figures can be selected at the next joint meeting and placed in line for publication, which will complete the division of the present Loading Rules in pamphlet form.

The detailed recommendations in the report consisted of (1) completed items scheduled for early inclusion in the

rules and (2) subjects still under consideration. The first group of items concerned revisions of rule 15 and Figs. 8-A, MD-1; 45, MD-1; 45A, MD-1; 171 and 172A, which changes were made at the request of shippers, while changes were made in Figs. 12, MD-1; 30, MD-1 and 44, MD-1 to clarify the intent of the rule. A new paragraph was added to Fig. 60, MD-1 concerning turntables more than 50 ft. in length to provide for greater safety.

In the second group there are approximately 17 subjects still under consideration, some of which will require only revision in the present specifications and figures, while others will require the formulation of new specifications and figures to cover. The subject embrace nine on steel products (coils; plates; sheets; slabs; tanks); two on farm machinery (preparation of farm equipment machinery pamphlet; tractors); four on stone and clay products; (stone; marble; pouring channels; sewer pipe); one on machinery (cranes) and one on Army-Navy material (engines).

Inspections have been made and experimental shipments are being forwarded, and other experimental tests considered, on loading methods for steel products, the results of which will determine their inclusion in the rules.

Progress has been reported by the subcommittees on the loading methods under consideration for stone, sewer pipe, pouring channels and cranes, all of which require inspection at the shippers' plants. These inspections are now being held, and the loading methods progressed for inclusion in the rules.

The experimental shipments of jet engines in metal containers, cradled and secured on flat cars, having proved satisfactory, specifications and drawings are being prepared by the subcommittee for inclusion in the Army-Navy Supplement No. 2.

The members of the Loading Rules Committee are: W. B. Moir (chairman) chief car inspector, Pennsylvania; H. H. Golden (vice-chairman), supervisor A.A.R. interchange and accounting, Louisville & Nashville; T. W. Carr, assistant to superintendent of equipment, Pittsburgh & Lake Erie; A. H. Keys, superintendent car department, Baltimore & Ohio; H. S. Keppelman, superintendent car department, Reading; F. A. Shoulty, assistant superintendent car department, Milwaukee; H. J. Oliver, assistant superintendent movie power, Detroit, Toledo & Ironton; G. R. Andersen, superintendent car department, Chicago & North Western; H. L. Hewing, superintendent of interchange, Chicago Car Interchange Bureau; N. A. Williams, assistant engineer freight car design, Union Pacific; L. F. Delventhal, Jr., transportation inspector, Western Pacific; and J. H. Campbell, supervisor of loading, Mechanical Division, A.A.R.

Forest Products Loading

Since the last meeting, the Special Committee on Lumber Loading has been renamed the Special Committee on Forest Products Loading. Due to the apparent necessity of including in the rules a figure to cover an economical method of loading lumber, new Fig. 6-C has been formulated. This figure covers the loading of packaged or bundled lumber 10 ft. to 16 ft. in length on flat or gondola cars and employs the best features of the various methods submitted to the committee by the shippers. It was felt that shipments loaded under this figure would materially decrease the present number of disarranged packaged lumber loads.

The following changes were approved for inclusion in the rules:

(1) The use of common wire of other gages for that specified, provided they are of equivalent load strength. This change was approved because of the present scarcity of No. 9 gage common annealed wire.

(2) The permission to load vertical pieces to a height of 5 ft. 6 in. above top of car sides in Fig. 22, to permit shippers to load 10 ft. ties vertically in gondola cars with 54-in. sides.

(3) The clarification of the second sentence of the paragraph covering gondola cars for Item B of Fig. 26 as follows: "Not required when logs in top layer adjacent to car sides extend ⅓ or more below top of car sides, and when logs between those against car sides extend 4 in. or more below top of car sides or ends."

These changes and new Fig. 6-C were included in the new Forest Products Pamphlet which has now been issued as No. MD-3, and covers the loading of all forest products.

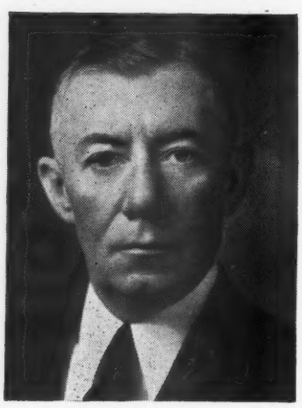
The members of this committee, in addition to the personnel of the Loading Rules Committee, are: F. A. Shoulty (chairman), assistant superintendent car department, Milwaukee; F. G. Moody (vice-chairman), superintendent car department, Northern Pacific; G. J. Lehnerer, superintendent car department, Illinois Central; and L. E. Day, district master car repairer, Southern Pacific.

Discussion

Harry D. Fenske, assistant vice-president, Great Lakes Steel Corporation, a unit of the National Steel Corporation, in commenting on the close cooperation which exists between the Committee on Loading Rules of the Mechanical Division and the various groups of shippers, said that in these highly competitive times in the transportation field such cooperation was an important accomplishment. He urged that it be extended even further. The great need to be filled, he said, is a better way to get freight to and from the place where the shipper wants it before and after it is moved in trainload lots. Mechanical officers, he thought, had much to contribute in the development of types of equipment most likely to meet this need. An effective method of making special types of cars for special lading carry revenue loads in every direction has not yet been found. This he presented as one of the problems in which cooperative effort might prove effective.

(The report was accepted.)

SAFETY APPLIANCES



R. G. Henley

During the preceding year the committee considered 101 applications for approval of designs of safety appliance details for use in construction, alterations or conversions of tank cars.

Since the last report, one new design of metal running board has been investigated, tested and approved. This design has been listed in the Interchange Rules under "Steel Running Boards" in Groups 1, 2 and 3 as "William F. Klemp Company's Welded Grating."

Application for approval of another new design of metal running board from another company is now under consideration. Application for change in securement details of another metal running board already included in the approved list is also being considered.

Progress was reported on revising the publication entitled "Maintenance of Air Brake and Air Signal Equipment on Locomotives and Cars."

The interested committees are following the service performance of the Illinois Central's 398 lightweight hopper cars equipped with "ABLC" brake equipment. (*See also report on Brakes and Brake Equipment.*—EDITOR.)

Members of the committee are R. G. Henley (chairman), general superintendent motive power, Norfolk & Western; H. T. Cover, assistant vice-president and chief of motive power, Pennsylvania; G. W. Bohannon, chief mechanical officer, Chicago & North Western; F. K. Mitchell, man-

ager of equipment, New York Central system; J. M. Nicholson, mechanical and research engineer, Santa Fe; A. K. Galloway, general superintendent motive power and equipment, Baltimore & Ohio.

(The report was accepted.)

WHEELS

E. E. Chapman

The introduction to this report outlined the changes in the Wheel and Axle Manual and included in the new printing dated February 1951 and now available. A modification of Paragraph 305 of this new manual has been made, as follows: "New unmounted wheels with ground treads should have the final tape size, measured after grinding, preceded by the letter G, stenciled with white lead paint on front and back of plate, and the tape markings cast on the wheel chipped to show the original as-cast tape size."

In this connection recommendation was made to the Committee on Specifications for Materials that Section 6 (d) of Specifications M-403 be revised to coincide with Paragraph 305 of the Wheel and Axle Manual.

The committee recommended certain changes in Par. 5, Sec. 4, Specification M-403.

Recommendations were made, as a letter ballot item, that designs for cast iron wheels, Manual page G-2A-1950 for Axle B and G-2B-1950 for Axles C to E inclusive, be advanced from "Recommended Practice" to "Standard."

It was also recommended, as a letter ballot item, that the nominal weight of 850-lb. single plate bracketed cast iron wheel (cored hub and alternate solid hub designs) shown on page G-2B-1950 of the Manual be reduced to 835 lb. without change in dimensions and, if adopted, necessary corrections be made in A.A.R. Specifications M-403—Cast Iron Wheels.

Cast Iron Wheel Failures.—As information, data concerning cast iron wheel failures reported to the Interstate Commerce Commission for the average of five years previous to 1950, and the year 1949, compared with 1950 where damage was over $275 showed the following:

Year	Total	Flange	Plate	Rim
1945-49, incl. (Avg.)	281	175	59	47
1949	174	140	30	4
1950	220	170	37	13

Specifications M-103 and M-107.—Due to the fact these specifications do not contain sufficient specific information with respect to standard and temporary standard designs of wrought steel wheels, the committee requested the Committee on Specifications for Materials to modify Sections 2—Design of Specifications M-103 and M-107 to read as follows: "2. Design—Standard and temporary standard designs and tread and flange contours for wrought steel wheels shall be as shown in Section G—Wheels in the A.A.R. Manual of Standard and Recommended Practice. Application for approval of designs not shown in Section G shall be addressed to the Secretary of the A.A.R., Mechanical Division for submittal to the Joint Subcommittee on Wrought Steel Wheel Design."

Suggestions were contained in the 1950 report for modification and additions in Sections 1 (b), 7, and 10 (c4). These suggestions were referred to the Committee on Specifications for Materials, which agreed to make the necessary changes with one exception and offered a further recommendation to modify Section 10 (c1) of Specifications M-107, as follows: *Proposed Form*—(c) Number of Tests.—(1) *Where continuous heat treating furnaces are used,* Brinell hardness measurements shall be made on 10 per cent of the wheels from each heat. *Where batch type heat treating furnaces are used, Brinell hardness measurements shall be made on 10 per cent of the wheels from each heat treatment lot, provided that at least one wheel is selected for test from each heat represented in the heat treament lot.*

The committee also recommended that Section 10 (c4) of Specifications M-107 be modified and in view of the deletion of the gages for rolled to finish multiple wear wrought steel wheels from the A.A.R. Manual due to this type wheel being no longer manufactured, the committee concurred in a recommendation to modify Section 14 (a) of Specification M-107.

Suggested Changes in Pages G-21 to G-26.—The preface shown on these pages in Manual Section G is no longer correct due to revisions and changed conditions. Such corrections as are necessary will be made and included in the next set of revised Manual pages. The outstanding change being made in these pages is the deletion of the old WPB designations for the various designs.

Redesign of AX-36—It was recommended, as a letter ballot item, that Design AX-36 wrought steel wheel be changed by increasing the hub diameter dimensions from the present 9½ in. to 9¾ in.

Restoring Design DX-40.—It was recommended, as a letter ballot item, that previous temporary standard design DX-40 engine truck wheel, formerly shown on Manual page 151, be re-established.

The 40-in. Diesel Wheel.—A recommendation was approved that a design of 40-in. diameter diesel locomotive wrought steel wheel, similar to the A-40 design except dimension G (rim thickness) changed from 2½ in. to 1¾ in., be permitted for manufacture and use not as an alternate standard but designated EXP-40 and considered as experimental until sufficient data are obtained to justify standardization.

Questionnaire on Steel Wheel Failures.—On one railroad thermal cracking was a serious problem. The use of Class A wheels exclusively in this service resulted in a reduction in removal of wheels for thermal cracking from 65 per cent to approximately two per cent of the wheels in service. The experience of this road emphasizes the importance of the scope clause in Specifications M-107, which designates the classes of wheels for various classes of service and in which it is specified that for high speed service with severe tread braking conditions and moderate wheel loads, the use of Class A wheels is very beneficial.

The answers to questionnaire on thermal cracking on diesel and passenger wheels should be available by the fall of 1951.

Marking Diesel Wheels.—Due to the desire of some roads to elimiate markings entirely from rims of diesel wheels, it was necessary to prepare an alternate method for marking on face of the hub of these wheels. This was shown as Fig. 2, in Appendix A and it was recommended, as a letter ballot item, that this alternate method be adopted and included in Specifications M-107.

Marking Requirements.—The committee considered the possibility of simplifying marking of wrought steel wheels other than the six diesel designs. In the interest of standardization and facilitating production, a suggestion was made that the same size of dies for hot stamping characters as are mandatory for the six locomotive designs be used. In accordance with this suggestion it was decided to correct Specifications M-103 and M-107.

Axle Capacity Ratings.—It is recommended, as a letter ballot item, that the 1928 standard freight car axle (Fig. 8, Wheel and Axle Manual) when used in BX service, be rated in accordance with the adjoining table and, if adopted, included in the next Supplement to the Wheel and Axle Manual.

Ultrasonic Inspection of Axles.—An ultrasonic reflectoscope has been used on driving axles, crank pins and billets to check for defects which could not ordinarily be found by magnetic particle testing or common visual in-

Capacity of Axles Under Cars in BX Service

A.A.R. axle designation	Size of journal in.	Capacity in Lb. for Axles for Normal Operating Speed Ranges (Based on 72-in. Center of Gravity and 33-in. Wheels) Up to 85 m.p.h. A.A.R. 1940 Std. pass. axle	A.A.R. 1928* std. frt. axle	86 to 100 m.p.h. A.A.R. 1940 Std. pass. axle	A.A.R. 1928* std. frt. axle
C	5 x 9	32,000	19,500	30,500	18,500
D	5½ x 10	40,000	23,500	38,000	22,500
E	6 x 11	50,000	30,000	47,500	28,500

section. Five railroads are investigating this type of inspection and it is felt that under the present state of development the instrument cannot be considered as a general shop inspection tool due to the special skill which is required for interpreting results. The committee does not consider this method of inspection as an alternate to magnetic particle testing of axles but in the future it may be used for inspection of diesel axles at points where magnetic particle testing cannot be used.

Special Cars for Transporting Wheels.—In the 1950 report attention was directed to the necessity for providing a sufficient number of special cars for the transportation of mounted wheels in an effort to reduce the number of damaged wheels and axles, particularly nicked axles occurring in transit.

Under existing high cost of labor and material in mounted wheel assemblies and in some cases included mounted roller bearings, it is of considerable importance that the safe transportation of this equipment to destination be secure. Nicking of axles means a complete loss of the accumulated labor cost, in addition to transportation costs, and frequently the axle is a total loss, which is considerably higher on normalized and tempered axles employed on roller bearing assemblies. It was urged that all roads give serious attention to special cars and that all roads provide a sufficient number of such special wheel cars to obviate the use of revenue flat and gondola cars.

The wheel committee reviewed, approved and referred to the Arbitration Committee certain changes in Rule 98 (i) pertaining to charges and credits for one-wear wrought steel wheels reclaimed by turning. Also, changes were proposed for revision of condemning limits, affecting Rules 71 to 82 inclusive and Rule 86 which will be further investigated and recommendations made.

Wheel Gages.—Recommendation included in the 1950 report to revise the limits for condemning cast iron wheels of 80,000 lb. capacity and over, was approved by letter ballot. This action involved modifications of gages shown in the Wheel and Axle Manual, Interchange Rules and Section B of the Manual of Standard and Recommended Practice. Necessary changes have been made on Manual pages B-45, B-83, B-108, B-47, B-98, B-109 and included in the latest Manual revision.

Recommendation also was made in the 1950 report that gages for roll finished wrought steel wheels and tires, shown on Manual pages B-42I, B-42J, B-96, B-97 and B-113, be eliminated, this type of wheel being no longer furnished by the manufacturers. This recommendation was approved by letter ballot and the pages involved eliminated from the latest issue of the Manual of Standard and Recommended Practice.

A recommendation was included in the 1950 report to provide separate gages for new one wear wrought steel wheels. The recommendation was approved by letter ballot and designs for these gages to include manufacturing tolerances, were prepared for inclusion in the Manual of Standard and Recommended Practice together with new master gage and wear limit condemning gage designs. These designs are shown on Manual pages B-42I, B-42J, B-96, B-96A, B-96B, B-97, B-112B and B-113. This action also necessitated the deletion of reference "one wear wrought" from Manual pages B-41, B-42A, B-99, B-100, B-101, B-102 and B-114.

It has been found that the standard steel wheel gage, Fig. 122 of the Wheel and Axle Manual, does not condemn high flanges at 1½ inch, due to the fact that the movable finger when set for high flange, Fig. 128, condemns flange at 1 $^{35}/_{64}$ in. high. This will require a modification in the design of this gage which is being progressed.

A simplified design of gage has been developed by some roads for gaging steel wheels to determine whether they are condemnable for high flange or thin rim. This gage can be used in place of the regular steel wheel gage, Fig. 122 of the Wheel and Axle Manual, for this purpose, the latter gage being more complicated and more expensive to furnish.

In the interest of economy and simplification, the committee recommended the use of a simplified gage of this type for roads desiring to use it. Drawings illustrating designs of this gage were shown in the report. This simplified gage is not intended to replace the standard steel wheel gage, which is necessary for use by forces whose duties require the measurements of service metal in terms of sixteenths of an inch on wrought steel wheels.

Wheel and Axle Manual Changes.—Recommendation is made, as a letter ballot item, that the following changes in Section XX of the Wheel and Axle Manual be adopted and, if approved, included in the next Supplement to the manual:

1.Revise third paragraph of Rule 354 (i), as follows: *Proposed Form—When secondhand wheels removed from service are to be remounted they shall be rebored in accordance with the requirements of this rule. Dismounted misfits having bores meeting the requirements of this rule in every respect may be remounted without reboring.*

2. Revise Rule 355 (n), as follows: *Proposed Form*—Wheel seats of secondhand axles must be re-turned prior to remounting. *Dismounted misfits having wheel seats meeting the requirements of this rule in every respect may be remounted without subsequent re-turning.*

3. Change Rule 356 (b), as follows: *Proposed Form*—Wheel mounting presses must be *equipped* with a dial pressure gage and a pressure recording gage. These gages must be in *reasonable agreement within the working range* and the dial gage must be checked at least *once* every six months *of service* by means of dead weight *testing for* accurate master gage *comparison. The test record shall be marked directly on the gage, showing date and where tested.*

4. Change Second Paragraph of Rule 355 (o) as follows: *Proposed Form*—The finished journal surfaces on all axles of plain bearing type in mounted wheels *being given any machining attention* must also be magnetic particle tested before being returned to service. (Also see Paragraph 221-A for axle defects, and Interchange Rules 84, 85 and 86.)

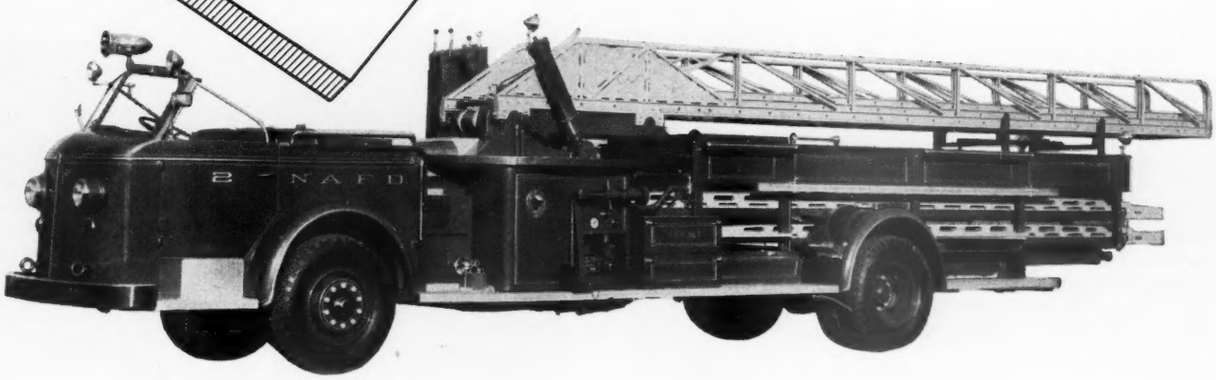
Wheel Balance—Passenger Cars.—The summary of first progress report of effect of wheel unbalance, eccentricity, tread contour and track gage on riding quality of railroad passenger cars was studied with view of determining advisability of including in Standard Wheel Specification M-107 a clause requiring th manufacturers to limit dynamic unbalance to 2.0 lb. at face of tread for wheels used on high speed or streamliner service. The following are the conclusions:

1. It is not advisable to introduce any clause in the specification concerning limitations of unbalance. This requirement can be and has been currently fulfilled by semi-finish machining of wheels where it has been ordered. The semi-finish machining here covers the machining of rim and hub fillets in addition to other machining standard to the product. This machining operation virtually assures all wheels coming within this 2-lb. unbalance limit.

2. The report of the Central Research Laboratory is a comprehensive and thorough analysis of the subject, and warrants careful consideration by all railroads in evaluating the needs or benefits of balancing of wheels. To this end, it is suggested that the committee give consideration to recommending that the general summary of this report be covered in a circular letter to the railroads and included in the annual report.

3. It should be noted that at least a part of the cost of balancing wheels should be offset by lower maintenance costs of truck equipment resulting from the reduction of wear in truck parts.

READY for Action!



FIRE fighting equipment must be in readiness for emergency service at all times.

Likewise steam locomotives should be maintained to meet emergency service ...they will certainly be called on.

Anticipate such demands by providing the necessary replacement stock of vital parts that will be needed to recondition and to maintain them.

Check your reserve stock of parts for SUPERHEATERS, FEEDWATER HEATERS, EXHAUST STEAM INJECTORS, STEAM DRIERS, THROTTLES AND HEADER CASTINGS.

With material shortages and increased demands on our facilities, delivery schedules are lengthening. Act now... it is later than you think.

THE
SUPERHEATER CO., INC.
Division of
COMBUSTION ENGINEERING-SUPERHEATER, INC.
200 Madison Ave., NEW YORK 16
Bankers Building, CHICAGO 3
Montreal, Canada, THE SUPERHEATER COMPANY, Ltd.
Representing AMERICAN THROTTLE COMPANY, INC.

Superheaters · Pyrometers · Injectors · Steam Driers · Feedwater Heaters · Steam Generators · Oil Separators · Welded Boiler Shells · Throttles

4. While the wheel tread eccentricity up to 0.035 in. produced no important effect on the riding of the test car, the existing tolerances on eccentricity should be observed since this contributes to lower cost in truck maintenance. In other words, the practice of providing concentric wheels is to be encouraged. It is particularly noted that 0.035 in. tread eccentricity was comparable in the effect on riding quality to one found total unbalance per wheel.

5. With refernce to tread contour, there appears to be slight difference between the two standard patterns now employed as optional standards.

The members of the wheel committee are E. E. Chapman (chairman), mechanical assistant, Santa Fe; H. H. Haupt (vice-chairman), general superintendent motive power, Pennsylvania; I. N. Moseley, research and test engineer, Norfolk & Western; A. M. Johnsen, engineer of tests, Pullman Company; M. S. Riegel, assistant engineer of tests, New York Central; R. W. Seniff, engineer of tests, Baltimore & Ohio; P. V. Garin, engineer of tests, Southern Pacific; B. C. Gunnell, chief mechanical engineer, Southern; H. E. Wagner, superintendent car department, Alton & Southern; and A. M. Guschl, general foreman wheel shop, Milwaukee.

Discussion

Clifford Stoner, Association of Manufacturers of Chilled Car Wheels, referred to the proposed reduction of 15 lb. in weight of the single-plate bracketed cast-iron wheel and said that foundry experience shows the practicability of successfully manufacturing this type of wheel without change in dimensions and with a reduction of wheel weight from 850 to 835 lb. In connection with chilled-wheel failures, Mr. Stoner said that the indicated small increase in 1950 over 1949 was partly balanced by the increase in traffic and that the real safety record of this type of wheel continues to improve from year to year. He stated that wheel defects within present wear limits may be a contributing cause of hot boxes and that more facts rather than opinions are needed regarding wheel conditions. Mr. Stoner concluded his remarks with an appeal for railroads to return all scrap chilled wheels to the foundries where this material is urgently needed to keep up the output of new wheels.

P. V. Garin, engineer of tests, Southern Pacific, described progress in modernizing wheel shop on this road and outlined what can be accomplished with carbide-tip tools which increase production, cut through hard spots and may be designed to give smoother finish.

C. B. Bryant, Technical Board Wrought Steel Wheel Industry, emphasized the notable performance of one road mentioned in the committee report in reducing the number of Class A wheels removed for thermal cracking from 65 per cent to 2 per cent of the steel wheels in passenger-train service. To illustrate the increased severity of wheel service due to higher train speeds, Mr. Bryant said that a comparative study showed 48,000 passenger-train miles over 60 m.p.h. at the beginning of a 10-year period had jumped to 129,000 at the end of the period. Similarly, a study of timetable speeds showed that to maintain an average of 57 m.p.h., 22 per cent of the mileage is made between 80 and 90 m.p.h. and 15 per cent over 90 m.p.h. In other words, 37 per cent of the mileage is made at speeds over 57 m.p.h.

Mr. Bryant also commented on the increased loads on passenger-car and diesel-locomotive wheels and the variation in braking load which may be 250 per cent on one car and 150 per cent on an adjoining car on the same train. He said that manufacturers are doing everything they can to produce steel wheels which will meet increasingly severe service conditions due to higher speeds, heavier loads and greater braking effort, but they are approaching physical limits of the metal itself.

Mr. Bryant closed his remarks by citing the case of a steel wheel failure investigation which showed that a wheel hub, under-cut by accident in machining, was built up by welding, remachined and failed in service. He urged a wider distribution and use of the Wheel and Axle Manual as a means of education to prevent such misguided zeal in saving company material.

A. G. Hoppe of the Milwaukee referred to the marking of diesel wheels and said this is essential so as not to lose the identity of wheels which must be investigated in cases of service failure. He said that ultrasonic inspection is intriguing, needs skillful interpretation and its use should be encouraged. Mr. Hoppe referred to the failure of roller-bearing axles and said these axles must be thoroughly inspected as well as plain-bearing axles. He said that some roads are nearly out of wheels for passenger service and cars will soon have to be set aside unless more steel is made available for multiple-wear wheels for passenger service as well as one-wear wheels for freight service.

COUPLERS AND DRAFT GEARS

Couplers

H. W. Faus

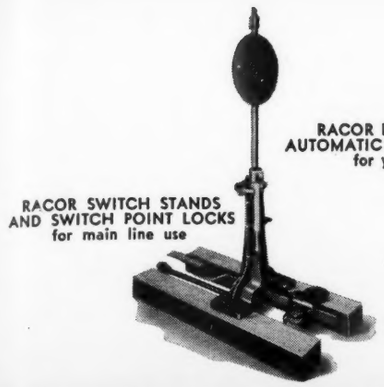
Shank Wear Plates.—Proposed regulations covering the application of wear plates on coupler shanks, recommended by the Mechanical Committee of the Standard Coupler Manufacturers, have been approved by the committee as a letter ballot item.

Diesel Coupler Standardization. — The committee found more than 80 different coupler designs on diesel locomotives. Slight variations in the designs effectively prevented interchanging couplers and because of the resulting maintenance problems and high cost the committee recommends that eleven designs selected by various railroads and the coupler manufacturers be submitted to letter ballot for adoption as alternate standards. The eleven designs selected, shown in the report, seem to meet the main differences in underframe designs of the locomotive builders. The committee believes new diesel locomotives should be designed to use only these alternate standards. Approval of the recommendation will not prevent the continued use and replacement in kind of all existing couplers on locomotives now in service.

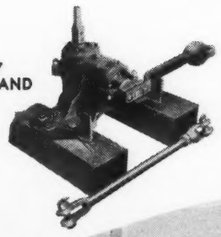
Coupler Specifications Revisions.—The revisions of Specifications M-204-49 and M-206-49 covering the purchase and acceptance of Types E and H couplers, respectively, are recommended as letter ballot items. The revisions, included as Exhibits B and C of the report, make the specifications consistent with the recommended welding procedure for high tensile steel castings as it affects coupler castings.

Coupler Reclamation (Types D and E).—With a decision made on the welding of high tensile steel castings the committee recommends, as a letter ballot item, the revision to Pages C-66 to C-72, inclusive, of Appendix A, Section C of the Manual to incorporate provisions for reclaiming high tensile steel Type E coupler bodies. The proposed revisions were included as Exhibit D of the report.

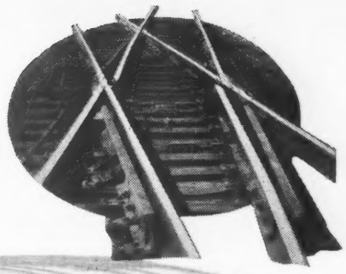
Improved Coupler Operating Rod.—An improved coupler operating rod, developed by the Standard Railway Equipment Manufacturing Company, is suitable for use with either the Type E coupler or the Type F interlocking coupler on freight cars. The rod is the same as the present standard rod except that the lower portion of the handle has an inwardly extended hand grip. Maximum leverage is obtained and the handle is in a better position fully to open the knuckle. The committee, with the concurrence of the Mechanical Committee of the Standard Coupler



RACOR SWITCH STANDS
AND SWITCH POINT LOCKS
for main line use



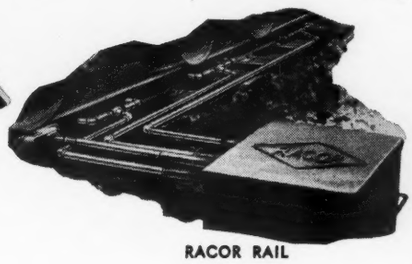
RACOR HEAVY DUTY
AUTOMATIC SWITCH STAND
for yard use



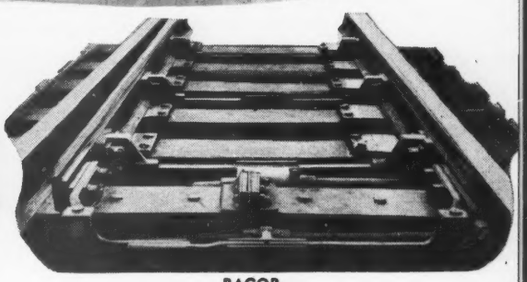
RACOR
BRACE RAILS

Continuous BRAKE SHOE RESEARCH

RACOR MANGANESE
STEEL CROSSINGS



RACOR RAIL
LUBRICATOR



RACOR
SWITCH RODS

Assures the best in RACOR equipment for American Railroads

Out in Mahwah, N. J. Brake Shoe maintains one of the world's most modern and outstanding Research Laboratories. Within its walls are housed the latest of scientific testing equipment to simulate actual field conditions — manned by a personnel of highly trained and experienced metalurgists, physicists and chemists. Year after year, day and night around the clock, a constant vigilance is maintained in the testing of RACOR materials and devices.

Thousands of dollars are spent annually in our fight against the forces of wear, impact and strain to assure longer life to every RACOR product — so as to offer the railroad industry the best product for the job whether it be switch stands or special trackwork.

RACOR

AMERICAN
Brake Shoe
COMPANY

RAMAPO AJAX DIVISION
109 North Wabash Avenue, Chicago 2, Ill.

Manufacturers, recommends letter ballot approval of this item as an alternate standard.

Pitt Type Coupler.—Due to failures in service and inherent weakness of design the committee recommends, as a letter ballot item, that the Interchange Rules be revised to provide that cars equipped with Pitt type couplers shall no be acceptable in interchange after January 1, 1955.

Type F Interlocking Coupler.—Ten cars were equipped with Type F interlocking couplers for freight equipment during the past year. Their performance in eight months of service was entirely satisfactory; the same is true of six car sets in service for approximately three years. An additional 43 cars are now being equipped with Type F Couplers. Because of the satisfactory record the committee has authorized an increase in trial service applications from 250 to 5,000 car sets. A new circular No. 5550 describing and illustrating the important features and advantages of the Type F coupler may be obtained from any of the standard coupler manufacturers.

Standard H Tightlock Coupler.—Because the outstanding advantages of this coupler are widely recognized, the committee recommends for letter ballot that this coupler be made mandatory for all passenger equipment cars built new on or after January 1, 1953.

An improvement in the design of the guard of this coupler to resist vertical distortion has been approved for incorporation in the manufacturers' equipment as soon as practicable. Also, as a result of the vertical distortion occurring with tightlock couplers it was apparent that the vertical distance between the guard arm and the aligning wing pocket opening should be increased. A change in the manufacturers' drawbar face and contour gage No. 31707 has been approved to provide a 1/8-in. minimum difference between the gage dimensions and the corresponding opening in the wing pocket.

Undesired emergency brake applications in freight trains hauled by diesel locomotives equipped with tightlock couplers have been caused by interference of the lower interlocking lug on the aligning wing pocket with the air hose on the freight car. To eliminate this condition instructions have been issued to the members on the procedure and details for modifying new and existing Type H couplers. Manufacturers have been authorized to incorporate the changes in new coupler production as soon as practicable.

Standard Yoke Tolerances.—To establish uniformly consistent control of the important dimensions of standard yokes the Mechanical Committee of the Standard Coupler Manufacturers proposed that tolerance be shown on the yoke drawings in the Manual. New drawings to replace those shown on pages C-38-A to C-38-D were included in the report and will be shown in the manual. Plate 321 in the Supplement to the Manual shows an obsolete design of the Grade B steel Y-40 yoke and the committee recommends its deletion.

Derailments of Cars Equipped with Swivel Shank or Swivel Butt Couplers.—The special subcommittee has completed its report covering the results of its studies of derailments on the Pennsylvania of empty cars equipped with swivel shank couplers and swivel yokes, or with swivel shank couplers with swivel butts and Farlow two-key yokes, when the cars are used in heavy pusher service. After thoroughly reviewing and discussing the results of extensive tests conducted by the committee and supplemental tests conducted by the Pennsylvania the committee recommends the elimination of the swivel butt coupler with horizontal yoke and two keys as an alternate standard. This action will involve the elimination of the swivel butt casting No. Y-20 from page C-32-A of the Manual. It is recommended for approval by letter ballot, effective December 31, 1951.

Draft Gears

Certified Draft Gears.—A certificate of approval was granted during the past year to a gear submitted by the American Steel Foundries but to be designated as the Peerless Quad type draft gear and sold by the Peerless Equipment Company. A rubber draft gear, the National Type M-260, submitted by the National Malleable & Steel Castings Co., is now being tested to the new tentative specifications for rubber draft gears for freight service.

Short Draft Gears—The short draft gears for cars of special construction approved to date are: Miner A-69-XB, Miner A-100-D, Cardwell V-18 and Cardwell L-11-S.

Check Tests of Certified Canadian Gears.—The tests of this group of gears have been completed and the results supplied to the manufacturers and the Canadian member roads.

Check Tests After Service.—Check tests of certified draft gears after 5 and 12 years of service have been completed except for the National M-50-B gear, specimens of which have not yet been found.

Waugh Twin-Cushion Tests.—Four specimens of the Waugh Twin-Cushion Type WM-4-6 gear, made of synthetic rubber, were tested after five years of service with an average of 134,000 miles of service. The gears were found in good condition and their capacity and performance were practically the same as when tested new, prior to application.

Waugh Twin-Cushion Type-4-6R Gear.—The application of 500 car sets of this gear has been authorized for experimental service. It is a modification of the Waughmat Twin-Cushion Type WM-4-6 with a yoke designed for use with rigid shank couplers.

Check Tests of Conditional Gears.—Three conditionally approved gears, the Miner A-22-XL, Hulson 202 and the Waugh-Gould 420, have had two years of service in substantial numbers. Arrangements are being made for check tests and if the results are satisfactory the gears will be eligible for unconditional approval.

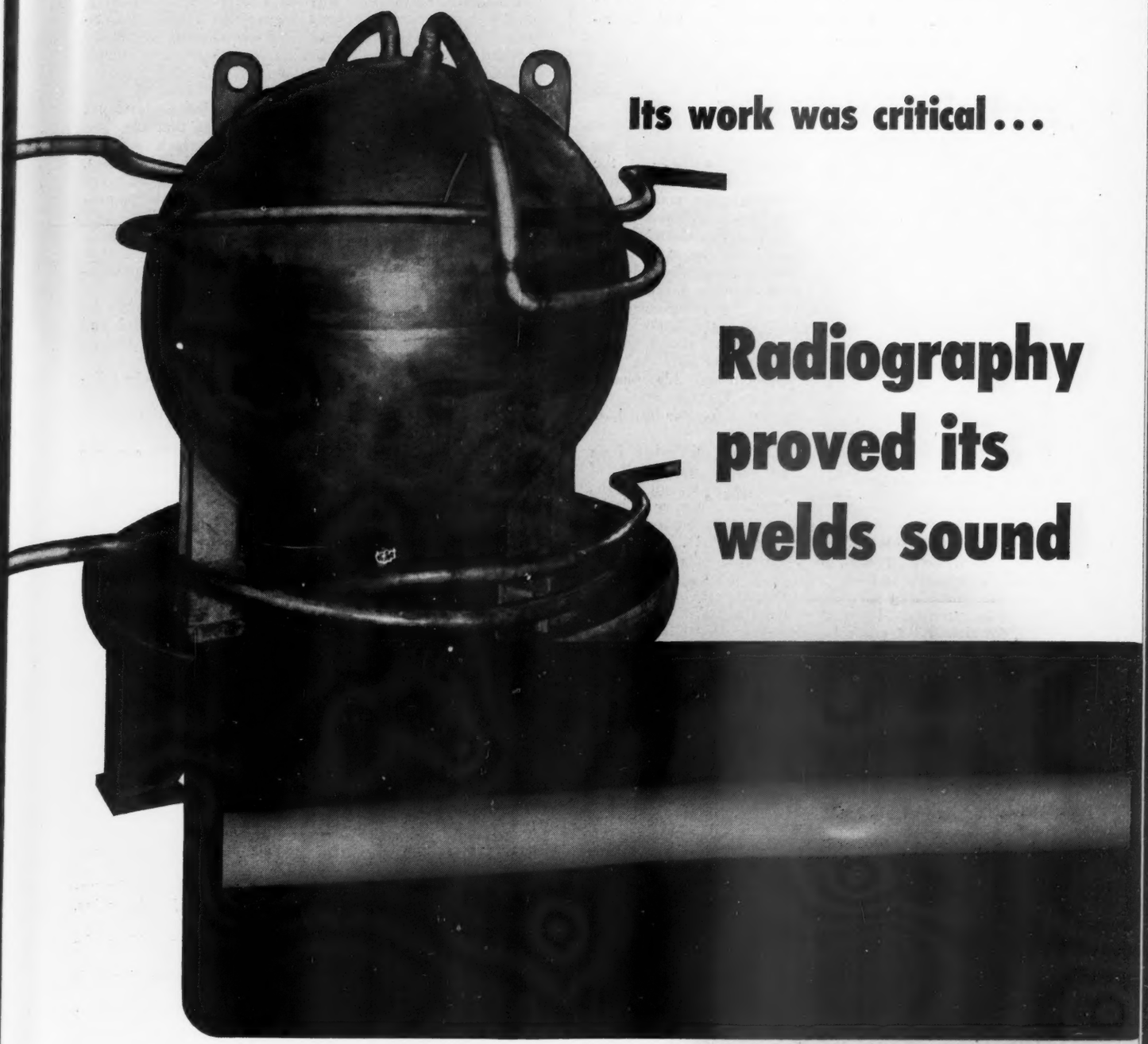
Draft Gear Reaction Measurements.—To find a better and simpler method of measuring draft gear reaction, extensive tests have been made at the A.A.R. Laboratory at Purdue University. Tests have been made on eight types of gears using SR-4 strain gages, a cathode ray oscillograph and a rotating drum camera, as well as the standard chronograph. Before it can be determined that the oscillograph records have practical value it is believed that impact tests will have to be made; such tests are under consideration.

Specifications for Rubber Draft Gears.—Tentative specifications covering draft gears of the rubber cushion type, included in the report, were submitted by the committee but they are not recommended for adoption as standard at this time. The tentative specifications are the same as those established for metallic type gears (Specifications M-901) except for modifications necessary to make them applicable to rubber gears.

The members of the committee are H. W. Faus, (chairman), engineer, locomotive equipment, New York Central; C. K. Steins (vice-chairman), mechanical engineer, Pennsylvania; F. T. James, general superintendent motive power and equipment, Lackawanna; B. Faughnan, assistant works manager Angus shops, Canadian Pacific; J. W. Hawthorne, general superintendent motive power and equipment, Atlantic Coast Line; I. N. Moseley, research and test engineer, Norfolk & Western; A. W. Maydahl, engineer car maintenance, Union Pacific; A. B. Lawson, mechanical engineer, Baltimore & Ohio; and N. A. Passur, engineer car construction, Southern Pacific.

Discussion

Several members commented, at length, concerning the difficulties that many roads are having with trains breaking in two due to the malfunctioning of the uncoupling rigging on certain types of bottom-operated couplers in both freight and passenger service. Those who discussed the subject presented the details of conditions surrounding several specific cases and the results of investigations that had been made to determine the causes. While recommendations were not made as to the manner of correcting the difficulties the general opinion was that the committee should



Its work was critical...

Radiography proved its welds sound

THIS welded sphere was made to do a vital job in an important project. The welded girth seam had to be sound. What's more, the engineers had to know it was sound.

That called for radiography. For radiography would reveal any serious lack of fusion or gas porosities. It would prove the soundness of the weld.

This is one reason radiography has opened new fields to welders. It is the reason welding has become accepted even in making pressure vessels.

If you would like to discuss the ways radiography can help increase your business and build a reputation for high-quality work, get in touch with your x-ray dealer.

EASTMAN KODAK COMPANY
X-ray Division · Rochester 4, N. Y.

Radiography...
another important function of photography

Kodak
TRADE-MARK

instigate a study of the entire situation both with respect to possible changes in uncoupling arrangements and the effects of wear of coupler and rigging parts.

BRAKES AND BRAKE EQUIPMENT

J. P. Lantelme

Charging Long Freight Trains.—At the request of the committee the air-brake manufacturers have conducted extensive tests to determine how increasing the diameter of the opening through the hose coupling gasket would affect reducing freight-train charging time. These tests showed that a 1¼-in. opening would be the largest practicable opening in a gasket for fitting the recess of the standard hose coupling.

It was concluded from test results that little, if any, improvement in the charging time would be obtained by increasing the gasket opening from 1-3/16 in. to 1¼ in. Additional tests were then made to determine the maximum possible decrease in charging time resulting from the complete elimination of all coupling restrictions such as might be produced by a new coupling of a completely different size and a much larger gasket. Depending on the leakage and main reservoir pressure conditions, the deductions in charging time for train lengths of 50 to 150 cars varied from 5.5 to 17.7 per cent as compared with tests run with standard hoses and hose couplings. The air-brake manufacturers emphasized that to obtain even a part of this reduction in charging time would require an entirely new coupling and gasket with its attendant serious interchange problem. These tests also emphasized that the effect of opening the present hose-coupling gaskets to 1¼-in. diameter would be insignificant.

Tests run on a 150-car train equipped with hose-and-nipple combination (no coupling restriction) to determine the effect on service and emergency transmission showed that the performance of the AB brake would not be adversely affected.

AB Load Compensating Brake.—The 25 Illinois Central 50-ton hopper cars equipped with the ABLC brake were inspected and given the single-car test after an average of 16 months of service. Following the test the operating portions were removed for rack test and examination with the following results:

Except for seven cases of inoperative slack adjusters due to burning of either the adjuster or the hose all brakes passed the single-car test. The railroad is planning to locate the adjuster at a less vulnerable point on 100 cars for trial.

Except for three cases where minor defects were found, all compensating valves passed all tests in the rack code for cleaned and repaired valves.

The brake cylinders were in good condition and well lubricated.

Two slack adjusters were replaced, one because of damaged teeth due to improper assembly and the second because of burning and rewelding of the body. Most slack adjuster hoses were replaced.

A complete report of the inspection and tests will be compiled as soon as possible.

Freight-Car Slack Adjusters.—As of March 26, 1951, the following number of automatic freight-car slack adjusters were either in service or so contemplated by the end of next year on the railroads represented by members of the committee:

Mechanical adjusters: Universal, 135; King, 1,127; Ajax, 1,052; Gustin-Bacon, 102 and Locomotive Finishing Company, 50. Pneumatic adjusters: Westinghouse Air Brake Company, 565 (including 398 in service on the Illinois Central's ABLC equipment), and Ajax, 6.

The committee suggests that all roads make as many trial applications as possible so that service performance may be determined. The committee believes that the time is fast approaching when some form of slack adjuster should be recommended for application on all freight cars.

Revisions to Rules and Specifications.—The committee has requested the Arbitration Committee to consider amplifying the stencil notes on the sketch, Page 135, Rule 60, in the Code of Rules from "Stencil here in location which presents clearest view from side of car" to read "Stencil on either side or either end of reservoir presenting clearest view from outside of car."

The revision of rules governing the maintenance of brake and train air signal equipment have been completed and forwarded by the General Committee to the I.C.C. Bureau of Safety for final approval.

The revision of A.A.R. Specifications No. 2518—Installation of AB Freight Brake Equipment has been completed and the air-brake manufacturers will be in a position to furnish them.

Charging Two Cars at One Time.—To conserve time in charging air brakes prior to making single-car tests, two different devices have been designed for charging air brakes on two cars at the same time. A circular letter, dated February 5, 1951, explaining these devices was issued by the secretary. The use of these devices is permissible providing all details are strictly followed. Much time can be saved thereby. The intention is to incorporate these devices in the next revision of Air Brake Instruction Pamphlet No. 5039-4 Sup. 1

Letter Ballot Items.—The committee recommends the following as letter ballot items:

That Manual Page E-14 be revised by adding a new paragraph to provide instructions for applying the alternate standard type of hose nipple, and that Page E-17 be revised to coincide with the change in the instructions.

That a new Page E-78-A be added to include the 2½-in. steam-heat coupler head. Also, that Page E-78-1947 be revised to change the incorrect 1-7/16-in. radius at the latch portion to the correct dimension of 2-7/16-in.

The Manual Page B-72 be revised to include a gage, modified by the manufacturers by request, that will condemn 15 to 25 per cent of the coupling that are passed by the present gage. Its adoption will reduce the number of worn couplings now being reused which may be responsible for excessive brake-pipe leakage in freight trains.

That Manual Page E-14 be modified so that water may be used as a bonding agent when mounting rubber air-brake hose. Tests conducted by several members of the committee indicated that water is satisfactory for this purpose.

That the double-lip "Canadian" type of air-hose gasket be adopted as an A.A.R. alternate standard gasket and included in Specification M-602, Section A of the Manual. This gasket has been in service on some of the roads represented by the committee members and indications are that a marked improvement was made in reducing brake-pipe leakage, especially when used in worn hose couplings.

Subjects under Consideration.—The committee is considering or investigating the following items:

Brake system leakage on freight-train cars is being actively investigated to determine what further action could be taken to reduce leakage.

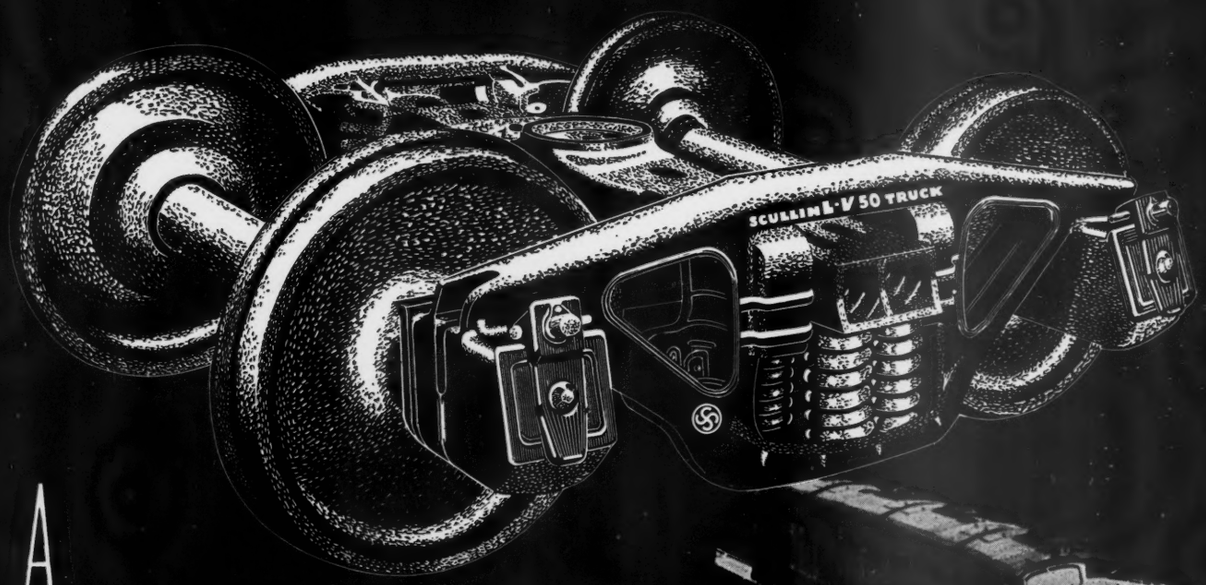
Standardization of air brake equipment on diesel locomotives.

Elimination of oil and moisture from air lines, particularly on diesel locomotives.

Location of AB valves on standard hopper cars.

Investigation of electro-pneumatic brake-circuit checking devices for diesel locomotives.

Investigation of terminal charging facilities for freight trains to reduce the moisture in yard air lines.



Any freight car is a more profitable car on

SCULLIN L 50 V TRUCKS

LATERAL VERTICAL
CUSHIONED MOTION

THE SMOOTHEST TRAFFIC-BUILDERS BETWEEN LCL AND YOUR RAILS

STEEL CASTINGS MANUFACTURER

NEW YORK
CHICAGO
BALTIMORE
RICHMOND, VA.

SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

Condemning gage for use on AB valve gaskets.

The members of the committee are J. P. Lantelme (chairman), assistant engineer, Pennsylvania; H. I. Tramblie, (vice-chairman), air brake engineer, Burlington; R. J. Dewsbury, general air brake inspector, Chesapeake & Ohio; R. N. Booker, general air-brake inspector, Southern Pacific; W. D. Bowser, engineer air brakes and train-control design, Union Pacific; D. R. Collins, superintendent air brakes, Denver & Rio Grande Western; F. T. McClure, supervisor air brakes, Santa Fe; A. J. Pichetto, general air brake engineer, Illinois Central; L. D. Hays, engineer brake equipment, New York Central; L. A. Stanton, general air brake instructor, Great Northern; and C. C. Maynard, chief inspector air brakes, Canadian National.

Discussion

R. E. Baker, assistant general manager, Boston & Maine, said that excessive brake-pipe leakage still causes trouble in train operation, particularly in sub-zero temperatures, and this leakage occurs not only at AB valve back covers, but on angle cocks, old hose couplers and in the brake-piping system. He questioned the desirability of reducing tolerances in the no-go hose coupling gauge, as suggested in the report, and also the economics of requiring the application of slack adjusters to all freight cars which are on repair track periodically for other work.

F. G. Moody, superintendent car department, Northern Pacific, also advised going slowly before making slack adjusters mandatory on all freight cars owing to maintenance difficulties. He said that railroads in the Northwest had hoped for more definite recommendations for reducing brake-pipe leakage in the committee report, the magnitude of this difficulty being indicated by the fact that last winter the Northern Pacific had to reduce the length of 105 trains an average of 11.7 cars per train to keep rear-end brake-pipe pressures within desired limits. Mr. Moody indicated that little real progress has been made in reducing leaks at AB valve back covers, ball-check covers and gaskets.

At the request of Chairman Lantelme, H. I. Tramblie, air brake engineer, C. B. & Q., explained that the committee did not enlarge on the subject of brake-pipe leakage which was thoroughly covered in previous reports. He said that leaks other than those at AB valves need more attention and that freight cars are not now getting in-date air-brake tests while on repair tracks as generally as desirable. He urged chief mechanical officers to explain what steps are being taken to get this important work done.

(The report was accepted and recommendations ordered referred to letter ballot.)

HOT-BOX ALARM DEVICES

The principal activity of the committee has been to review devices submitted by individuals and manufacturers. and continue observation of the devices undergoing road service tests. At a meeting on May 3, a suggestion was submitted for employing a bolometer, or electronic radiation type of detector. The bolometer would be located along the track and is supposed to indicate the presence of overheated journals on cars passing a given point. A subcommittee has been appointed to investigate the possibilities and economics of this device.

Road Service Test Program.—Of the four hot-box alarm systems or devices approved for road service demonstration, two remained in service during the past year. The following tabulation shows the results of the service tests of the two devices from the date of the original application to March 31, 1951.

Alarm equipment	Service months	True indications	False alarms	Possible False alarms	Failures	Equipment defect
Pennsylvania cartridge	59	12	16	1	4	37
Magnus Metal Twin Plex	52	3*	1	0	0	1

* In the 1950 report these three instances were listed under "Failures." After review of reports covering these cases, the committee changed the classification as listed above on the premise that the records showed in all cases at least one of the bombs was discharged, but train crew failed to detect. Both tests were terminated during the past year.

(Four appendixes included with the report gave complete chronological data on the service experience on both devices.—EDITOR)

Member-Road Service Experienced.—The New York Central furnished the following report of experience on trains en route with the Twin Plex Hot Box Alarm:

	Number of cases 39,000, friction bearings	19,960, roller bearings	Total
(1) One or both alarm cartridges functioned, noted by train crews or others, overheated bearing found and proper action taken ...	15	5	20
(2) Overheated bearings found by inspectors at station stops; one of both alarms functioned in each case, but no action taken by train crew ..... In most of these cases bearing was in process of overheating with alarm cartridges only partially discharged when discovered. In at least 11 cases both alarms had fully discharged, giving train crews full warning	28	3	31
(3) False alarms: Noted by train crew, 1; by test engineer at station stop, 1 ..... In both of above cases journals had obsolete odor cartridge only.	0	2	2
(4) Failure to function — bearing found overheated at station stop. Obsolete smoke and odor cartridges	0	1	1
Total on Trains en Route	43	11	54

In furnishing the committee with the above statistics it was stated: "There might have been extenuation under Item (2) in which the train crew apparently failed to take any action. The fact that in no case were the consequences serious would indicate that failure to take action may have been prompted by the knowledge that train was sufficiently close to a scheduled stopping point to make such action unnecessary.

"In addition to reports covering trains, as summarized above, a substantial number of reports were received listing partly discharged or leaking alarm cartridges found on cars at terminals and in yards. These are not included here because complete information was lacking in many cases as to whether the bearings in which these leaking or partly discharged alarm cartridges were found showed evidence of overheating or not. This was difficult to determine because Satco lining metal does not begin to melt until it reaches 585°F. Therefore a bearing might have been heated to say 450°F., well above the 350°F. temperature at which the alarm discharges, and yet when cold show no superficial evidence of having been overheated. Unfortunately, most of these bearings were destroyed before the question of whether they had been overheated could be determined to the satisfaction of all concerned." (A detailed record of 59 cases was included in an appendix—EDITOR)

The Fenwal Journ-A-Larm System.—As of August 20, 1950, Southern Pacific has had 185 cars, including sleepers, operating with Fenwal Journ-A-Larm system. Eighty-nine of these cars have been in service since May 1, 1950. The entire group of these cars are equipped with roller bearings.

A number of false hot-journal alarm indications have been experienced since May 1950. These false indications were not confined to any particular train or territory, nor were they confined to any particular type of car. The majority of false alarms were caused by (a.) defective control switches on the alarm control, (b.) defective operation of timers operating the solenoid alarm valves, and (c.) internal breaking of leads inside the head of the thermoswitch. A relatively few other defects resulted in false alarms.

The experience gained with the Fenwal system for the past year has revealed certain weaknesses in the present system. These weaknesses could be determined only by thorough and continued use of the device in actual service on a large number of cars. The manufacturer has initiated a development program for the purpose of providing a basically new system for detection of overheated roller-bearing journals. The changes will be principally in the alarm panel located in the car electric locker and the thermoswitches. The present car-journal alarm wiring will remain practically unchanged. The circuit arrangement for the new system will be a normally open circuit with an auto-

matic checking feature. About 10 or 12 cars will be equipped with the new device later in 1951 for road service tests.

On February 15, 1951, the journal alarm system functioned as intended indicating a hot journal on a sleeping car on Train 3 at Planeport, Texas. It was necessary to cut the car out of the train at El Paso approximately six miles from Planeport.

The Fenwal Journ-A-Larm system employed by the Southern Pacific is generally classified as a relatively expensive, electric type, applicable to passenger cars only. It is obvious that this device is still in the development stage, but that progress is being made in overcoming some of the service defects encountered in the original installations of the device on this railroad.

Members of the committee are J. R. Jackson (chairman), mechanical engineer, Mechanical Division, A. A. R.; M. A. Pinney, engineer of tests, Pennsylvania; H. L. Holland, assistant mechanical engineer, Baltimore & Ohio; J. Stair, Jr., electrical engineer, Pennsylvania; H. T. Rockwell, assistant engineer, New York Central; L. H. Sultan, electrical engineer, Southern Pacific.

(The report was accepted.)

SPECIFICATIONS FOR MATERIALS

W. F. Collins

The committee made recommendations on the following specification changes:

M-101 (carbon-steel axles, as forged) to increase the permissible run out of the center of the axle from ¼ in. to ⅜ in. as an emergency measure, and two other changes to be submitted to letter ballot.

M-105 (blooms, billets and slabs for forgings) to be separated by the committee during the coming year into two specifications, M-105 to cover carbon steel and M-131 to cover alloy steel.

M-106 (steel tires, locomotives and cars) to conform to present commercial practice.

M-107 (multiple-wear wrought carbon-steel wheels) to meet changed conditions of service and present mill heat-treating practices.

M-108 (boiler tubes) deleted because product covered is no longer made.

M-110 (rivet steel and rivets) editorial changes.

M-111 (pipe for special purposes) and M-114 (carbon-steel helical springs) to be consistent with commercial practices.

M-115 (boiler and firebox steel) is under consideration for revision to decide if the copper restriction should be deleted from the base specifications and included as a supplementary requirement.

M-118 (coupler knuckle pivot and swivel pins) to meet currently accepted standard practices and to avoid paying extra for special chemical requirements.

M-120 (journal-box lids) to include specifications for 6½ in. by 12-in. journal-box lids.

M-124 (heat-treated steel tires) and M-130 (pipe for ordinary uses) to meet present commercial practice.

M-403 (malleable iron castings) to include three changes in identification marks.

M-502 (relined journal bearings) to set up the same tolerances for new and relined bearings, thus requiring only one set of inspection gages.

M-601 (air-brake and train-air-signal hose), M-603 (cutting and welding hose), M-605 (steam and hot-water hose), and M-608 (air-pneumatic tool hose) to permit the use of synthetic rubber.

M-904 (renovated car oil), M-905 (new waste for journal-box packing), M-906 (new car oil), and M-910 (renovated journal-box packing) as emergency specifications to supersede present A.A.R. specifications until the research now being conducted is completed to keep hot boxes down.

M-911 (bristle, hair, fiber and wire brushes) and M-195 (nylon filament brushes)—a revision is under consideration as an emergency specification.

M-916 (car and locomotive sand) to include new specifications for car and locomotive sand.

The changes, except for emergency measures and editorial revisions, were recommended for letter ballot.

General

A study of diesel crankcase lubricants and fuel proposed in the 1950 report was considered at a meeting of the Committee on Research, and it was decided that the subject should be progressed.

The proposal in the 1950 report that requirements for winter thinner or cut-back oil for journal boxes be added to M-906-New Car Oil was rejected in favor of formulating new specifications covering suitable oil for this purpose. This was assigned to a subcommittee which submitted a draft of specifications to the major oil refineries to solicit comments and suggestions. The replies indicated that the specifications would greatly limit the source for such an oil.

The proposed specifications were submitted to J. R. Jackson for review on the basis of facts developed at the Indianapolis laboratory. Tests there indicated that no appreciable benefit is derived from mixing cutback oils with ordinary renovated oil to prevent journal-box packing from rolling or being displaced on starts in subzero weather, and that blending oils and procedure requiring technical control should be done in a properly equipped and supervised blending plant.

It was suggested that, before any specifications for cold-weather journal swabbing oil are adopted, samples of the proposed oils be sent to the Indianapolis laboratory for comparative tests under extreme subzero temperature conditions. These particular tests will include other materials besides the oils mentioned, such as isopropyl alcohol, distillate fuel oil and kerosene. While these materials are prohibited under present A.A.R. rules it is believed that their effectiveness as swabbing material should be established for judicious use as they appear to be the only effective treatment under extreme subzero operating conditions.

Members of the committee are W. F. Collins (chairman), engineer of tests, New York Central; P. H. Smith (vice-chairman), engineer of tests, Burlington; H. G. Burnham, engineer of tests, Northern Pacific; M. A. Pinney, engineer of tests, Pennsylvania; Frank Fahland, research and standards engineer, Union Pacific; R. W. Seniff, engineer of tests, Baltimore & Ohio; E. B. Fields, engineer of tests, Santa Fe; R. McBrian, engineer standards and research, Denver & Rio Grande Western; L. S. Crane, engineer of tests, Southern; G. E. Baumgardner, assistant research engineer, Norfolk & Western; V. C. Barth, chief chemist, Chicago & North Western.

Discussion

It was asked if the A.A.R. has any provisions for remedying cold-weather starting during the interim period while a cold-weather journal-box oil is being developed. The answer was that tests have shown that thinner oil does no good—the original characteristics of the oil were retained. The packing rolled even when the oil was cut with kerosene. The tests were made without packing retainers.

Tests run by a railroad at from 35 to 50 below showed that retainers would reduce but not eliminate rolling.

One member pointed out that on the Northern Pacific the hot-box problem is at its worst in July and August.

Since the report was printed two requests for certificates of approval have been received for 6½-in. by 11-in. journal-box lids.

(The report was accepted and the recommendations referred to letter ballot.)

GENERAL NEWS

Canadian Rates Increased

(Continued from page 69)
enue of $89 million, to be produced by a dual boost of 5 and 15 per cent, chiefly to meet the higher wages resulting from the settlement of the general railway strike of last August.

Last week's increase is the third freight rate boost since 1946. Two years ago the roads were given a 21 per cent increase and in 1949 and 1950 they received another of 20 per cent spread over three installments. The present interim award will stand until the board has made a fuller study of the railways' revenue needs and also of the effect of the 40-hour week awarded railway employees last August. The Canadian Pacific and Canadian National have asserted the 40-hour week alone will cost them $36 million a year.

Senate Committee Minority Raps Wage Dispute Report

Three members of the Senate Committee on Labor and Public Welfare have dissented from the report which a majority of their colleagues made on the committee's recent investigation of the failure to settle wage and rules disputes involving railroad employees who are represented by the operating brotherhoods.

The dissenters, who attached their "minority views" to the committee's report, are Senators Taft of Ohio, Smith of New Jersey, and Nixon of California, all Republicans. For its report, the committee majority adopted, with minor changes, a report prepared by the committee's staff. (*Railway Age* of June 18, page 59, and July 2, page 35.)

Thus the majority went along on criticism of the White House intervention in the wage cases, and on conclusions to the effect that government operation of the railroads is a one-sided arrangement, loaded in favor of management. The three minority members found themselves unable to concur because, first, they "seriously question the wisdom of the committee holding hearings and publishing a report on a pending labor-management dispute."

Messrs. Taft, Smith and Nixon also had two other basic reasons for their dissent. They do not think it is the "proper function" of the committee, nor do they believe the committee is qualified, to make recommendations "concerning the merits of a pending labor-management dispute"; and they think the hearings and the majority report "are inadequate and inappropriate as a basis for sound legislative proposals by the committee in the field of labor-management relations in the railway industry."

After referring to like previous

NEAR YOU

there's a GRAYBAR man

who can save you time in obtaining railroad lamps and lighting equipment, pole line supplies, communication equipment, electrical repair-shop supplies, ... everything electrical!

At strategic points throughout the nation, many first-quality electrical items are conveniently available via Graybar. In the following list of Graybar warehouse locations, you'll find the name, address, and phone number of a Graybar Representative near you – a specialist who can help you obtain the electrical items you want with minimum delay. He'll gladly answer any questions about technical aspects, deliveries, prices, or Graybar service. *Graybar Electric Company, Inc.... in over 100 principal cities. Executive offices: Graybar Bldg., New York 17, N. Y.*

102-207

ALABAMA
*Birmingham 3 — 1529-31 First Ave., N.
Birmingham 4-1861 • L. A. Womeldorf
Mobile — 73 Lipscomb Street
Mobile 2-3511 • R. L. Wear

ARIZONA
*Phoenix — 434 West Madison Street
Phoenix 3-6131 • E. E. Leavy

ARKANSAS
Little Rock — 417 Byrd St.
Little Rock 5-1246 • J. C. English

CALIFORNIA
Fresno 2 — 101 Van Ness Ave.
Fresno 2-4175 • B. R. Cole
Long Beach 13 — 17th St. & Daisy Ave.
Long Beach 70-2911 • C. F. Parks
*Los Angeles 54 — 210 Anderson St.
Angelus 3-7282 • C. V. Kelly
Oakland 7 — 1911 Union Street
Glencourt 1-5451 • M. L. Wilkins
*Sacramento 1 — 1900 14th Street
Gilbert 2-8976 • A. R. Fryklund
*San Diego 1 — 720 State Street
Franklin 1361 • R. T. Redfield
*San Francisco 1 — 1750 Alameda St.
Market 1-5131 • O. W. Balser

COLORADO
*Denver 4 — 104 Wazee Market
Tabor 7116 • H. E. Woodring

CONNECTICUT
West Hartford 6 — 453 New Park Ave.
Hartford 33-2631 • D. E. Sullivan
*New Haven 7 — 25 Union Street
New Haven 8-4163 • P. F. Lee
E. F. Berger

DELAWARE
Wilmington 3 — 1005-1007 W. Fourth St.
Wilmington 4-6245 • L. E. McIntyre

DISTRICT OF COLUMBIA
*Washington 2 — 60 Florida Ave., N.E.
Adams 4800 • A. C. Eastburn

FLORIDA
*Jacksonville 1 — 12th & Main Sts.
Jacksonville 6-7611 • I. A. Williams
Miami 30 — 835 Northwest First Ave.
Miami 9-1614 • J. E. Powell
Orlando — 533-35 W. Central Ave.
Orlando 6133 • H. E. Smitter
St. Petersburg 3 — 1900 First Ave., South
7-4161-2 • R. L. Munro
Tampa 1 — 416 Ellamae Street
Tampa 2-7791 • R. S. Robinson

GEORGIA
*Atlanta 1 — 333 North Ave., N.W.
Cypress 1751 • W. A. Northington
G. Sweeney
*Savannah 1 — 2601 Whitaker St.
Savannah 2-1121 • W. B. Owens

IDAHO
Boise — 14th & Idaho Sts.
Boise 6315 • L. Maynard Smith

ILLINOIS
Chicago 7 — 850 W. Jackson Blvd.
Canal 6-4100 • E. J. O'Donnell
F. D. Wilson
Peoria 2 — 704 South Adams St.
Peoria 4-8211 • W. W. Smilde

INDIANA
Evansville 14 —1709-1713 E. Columbia St.
Evansville 6-1357 • N. S. Muse
Hammond— 5830 Calumet Ave.
Sheffield 5830 • J. J. Lieske, Jr.
*Indianapolis 2 — 1300 W. 16th St.
Atlantic 2351 • W. O. Pape

IOWA
Davenport — 206-210 East 5th St.
Davenport 3-2769 • E. L. Johnson
Des Moines 9 — 24 Eleventh Street
Des Moines 3-8614 • D. M. Hitchcock

KANSAS
Wichita 1 — 424 No. Rock Island Ave.
Wichita 7-1366 • E. F. Linnerson

KENTUCKY
*Louisville 8 — 624-628 Myrtle St.
Calhoun 5411 • C. H. Brown
*Paducah — 418 Guthrie Building
Paducah 960 • R. A. Newberry

LOUISIANA
Baton Rouge — 2442 Ted Dunham Ave.
Baton Rouge 4-7093 • S. M. Lawrason
*New Orleans 13 — 1116 Magnolia St.
Canal 6263 • L. J. Olivier
Shreveport — 90 Fannin St.
Shreveport 4-6645 • A. W. Wheeler

MAINE
*Portland 3 — Center & Commercial Sts.
Portland 3-1761 • H. J. Scully

MARYLAND
*Baltimore 2 — 100 South Street
Saratoga 5050 • J. D. Rhoads

MASSACHUSETTS
*Boston 16 — 287 Columbus Avenue
Kenmore 6-4567 • G. J. Pink
Springfield 4 — 32 Patton St.
Springfield 7-4373 • H. O. Edoff
Worcester 5 — 108 Grove Street
Worcester 6-4311 • H. G. Rappel

MICHIGAN
*Detroit 1 — 55 West Canfield Ave.
Temple 1-5500 • C. R. Carlson
W. E. Watson
P. L. Gundy
*Flint 6 — 2424 Kansas Ave.
Flint 2-4101 • E. C. Bryden
Grand Rapids 2 — 432 Monroe Ave., N.W.
Glendale 1-2561 • H. G. Cook
*Lansing 2 — 125 E. Shiawassee St.
Lansing 4-5434 • J. D. Akers

MINNESOTA
*Duluth 2 — 320 West 1st Street
Melrose 6645 • P. D. Barber
*Minneapolis 15 — 824 South Fourth St.
Geneva 1621 • E. J. Aubrecht
*St. Paul 1 — 464 Robert St.
Cedar 7491 • L. E. Luckman

MISSISSIPPI
*Jackson — 154 E. Porter St.
Jackson 3-6316 • A. N. Saxon

MISSOURI
*Kansas City 8 — 1644 Baltimore Ave.
Baltimore 1644 • R. B. Uhrig
E. H. Williamson
*St. Louis 3 — 2642 Washington Ave.
Newstead 4700 • J. R. Hayes
R. M. Peck

MONTANA
Butte — 604 E. Aluminum St.
Butte 3234 • E. J. Hoff

NEBRASKA
*Omaha 2 — 1120 Capitol Ave.
Atlantic 5740 • D. L. Harper
L. J. O'Connell

NEW HAMPSHIRE
Manchester — 103 Hampshire Lane
Manchester 4-4341 — P. A. Dorn

NEW JERSEY
Newark 5 — 2 Liberty St.
Market 2-5100 • J. P. McCarthy

NEW YORK
*Albany 4 — 40 Van Woert St.
Albany 5-1564 • F. C. Sweeney
Binghamton — 603 Press Bldg.
Binghamton 2-5926 • M. E. Ransom
Buffalo 4 — 180 Perry St.
Washington 3700 • K. L. Thielscher
*New York City — 21-15 Bridge Plaza North
Long Island City 1
Stillwell 6-5858 • W. C. Lieneck
Rochester 4 — 186 North Water St.
Baker 7700 • J. T. Porter
Syracuse 1 — 327 North West Street
Syracuse 2-1281 • W. J. McNulty

NORTH CAROLINA
Asheville — 221 Patton Avenue
Asheville 3-4761 • A. A. Wilson
*Charlotte 1 — 120 W. Morehead St.
Charlotte 6-4886 • H. Corey
Durham — 303 South Duke Street
Durham F-113 • M. C. Shorey
Winston-Salem 1 — 955-59 Brookstown Ave.
Winston-Salem 4-2461 • J. W. Van Dorsten

OHIO
Akron 9 — 185 Carroll St.
Jefferson 4-4143 • N. W. Zilch
*Cincinnati 14 — 115-129 W. McMicken Ave.
Main 0600 • J. V. Neal
Joseph Ellis
*Cleveland 14 — 1010 Rockwell Ave.
Cherry 1-1360 • A. R. Hicks
Columbus 15 — Third & Chestnut Sts.
Fletcher 3811 • C. E. Furber
Dayton 2 — 332-42 West Monument Ave.
Michigan 5665 • A. J. Fischer
Toledo 2 — 1700 Canton Street
Main 9166 • E. P. Jones, Jr.
Youngstown 1 — 602 West Rayen Ave.
Youngstown 4-0124 • W. C. Robinson

OKLAHOMA
Oklahoma City 2 — 12 E. California St.
Oklahoma City 3-9351 • W. A. Arthur
Tulsa 4 — 2406 E. 12th St.
Tulsa 6-1151 • F. L. Cummings

OREGON
Eugene — 2180 6th Ave. West
Eugene 4-2224 • H. O. Colburn
*Portland 9 — Park & Flanders Sts.
Broadway 6641 • Marvin Peck

PENNSYLVANIA
Allentown — 1941 Hamilton Street
Allentown 4-9341
Bethlehem 1-0657 • W. L. Hall
Harrisburg — 1039 S. Thirteenth St.
Harrisburg 5-7303 • W. H. Naudascher
Philadelphia 7 — 910 Cherry St.
Walnut 2-5405 • W. W. Frazee, Jr.
D. M. Antrim
Fred Jaeger
*Pittsburgh 12 — 900 Ridge Ave.
Allegheny 1-4100 • J. G. McNeely
R. F. Grossett
Reading — 22 South Third Street
Reading 6-1581 • T. J. Hopkins

RHODE ISLAND
Providence 3 — 194-196 Richmond St.
Dexter 1-8100 • T. A. Purcell

SOUTH CAROLINA
Columbia — 710 Lady St.
Columbia 2-2125 • J. H. Littleton, Jr.

SOUTH DAKOTA
Aberdeen — 224 First Ave. S.E.
Aberdeen 2974 • D. G. Hubbard

TENNESSEE
Bristol — 29 Fifth Street
South 4415 • R. L. Coward
Chattanooga 1 — 1222 Carter Street
Chattanooga 6-5624 • J. R. Feeney
Knoxville 30 — Henley St. & Union Ave.
Knoxville 3-6171 • C. C. McGraw
*Memphis 3 — 484 South Front Street
Memphis 37-3421 • J. W. Horne
*Nashville 2 — 313-315 8th Ave. So.
Nashville 6-7161 • Herschel Hall

TEXAS
*Amarillo — 601 E. 2nd Avenue
Amarillo 2-6778 • L. P. Bell
Austin — 214 E. 3rd St.
Austin 8-5674 • George W. Cox
Beaumont — 1070 Fannin St.
Beaumont 2-8484 • L. A. Haley
Corpus Christi — 1311 Agnes St.
Corpus Christi 4-6374 • R. E. Broyles
*Dallas 1 — 717 Latimer St.
Randolph 6454 • A. Frank Hamm
El Paso — 427 West San Antonio St.
El Paso 3-7561 • C. A. Steinmann
*Fort Worth 7 — 1107 Foch St.
Edison 4523 • Vernon Young
*Houston 3 — 1702 Cullen Blvd.
Atwood 8-4571 • W. P. Worley, Jr.
San Antonio 8 — 1401 N. Hackberry St.
Fannin 6274 • J. Emmett House

UTAH
*Salt Lake City 13 — 336 N. 3rd West St.
Salt Lake City 9-8771 • R. H. Lee

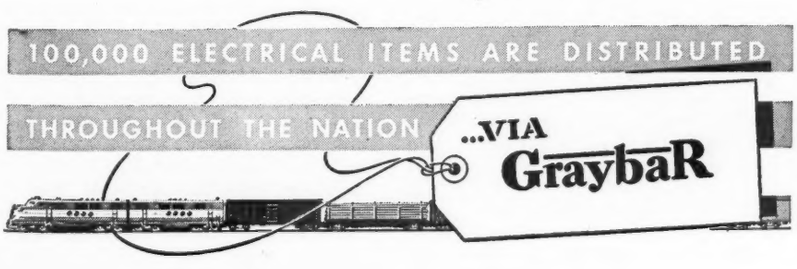
VIRGINIA
*Norfolk 1 — 333 West 21st St.
Norfolk 2-2727 • L. E. Burford
W. R. Nottingham
*Richmond 19 — 10 S. 6th St.
Richmond 7-3491 • E. C. Toms
*Roanoke 5 — 601 Salem Ave.
Roanoke 3-3615 • W. E. James

WASHINGTON
*Seattle 4 — King & Occidental Sts.
Mutual 0123 • E. C. McEachron
*Spokane 8 — 152 South Post St.
Riverside 3151 • W. A. Sparks
*Tacoma 1 — 2112 "A" Street
Main 0166 • R. J. Franzen

WEST VIRGINIA
Charleston — 600 Chamber of Commerce Building
Charleston 6-0411 • John T. Young

WISCONSIN
Milwaukee 2 — 180 No. Jefferson St.
Marquette 8-1946 • R. J. Harkins

*At these warehouses, there are Graybar Representatives who have special experience in handling railroad electrical requirements.



cases, the dissenters asserted that such activities of the committee "have a tendency to obstruct rather than to facilitate collective bargaining." It was noted that the case involving employees represented by the Brotherhood of Railroad Trainmen has been settled since the committee held its hearings; but it is "doubtful," as the minority put it, if the hearings contributed to this agreement.

"Unsuited" Role

It seemed to Messrs. Taft, Smith and Nixon "obvious" that the committee could not publish a report on a pending dispute "that does not, in effect, constitute an intervention . . . and a precedent for intervention into other specific labor disputes." They also said that the committee had cast itself into the "unsuited" role of an emergency board.

The minority also found in the majority report a "distressing lack of objectivity at several points." By way of example, it cited the majority's discussion of the controversy regarding the "memorandum of agreement" which was signed by the brotherhood leaders at the White House on December 21, 1950, only to be rejected by the general chairmen of their unions. The minority's comment included the following:

"We agree that the evidence . . . indicates that the representatives of the brotherhoods affixed their signatures to this memorandum with the reservation, so far as they were concerned, that this action represented merely tentative agreement to its terms, subject to the unpredictable possibility of ratification by the membership. But we have searched the report of the majority in vain for any mention of what we consider to be the equally persuasive case for the carriers and the government representatives, namely, that the signing of the agreement carried with it a strong and almost self-evident moral obligation for the brotherhood representatives to recommend acceptance of the terms of the memorandum to their membership as the basis for a formal agreement. . . ."

The minority also criticized the majority's endorsement of the Railway Labor Act without consideration of the procedures of the National Railroad Adjustment Board. There was "very little" discussion of such procedures at the hearings, and "no mention whatsoever of this subject in the majority report," Messrs. Taft, Smith and Nixon said. They added that the Adjustment Board situation "can hardly be dismissed as an insignificant part of the labor-management picture."

The minority also singled out from the majority report a statement which said that "the railroads 'constitute a favored industry, one vested with a public interest' enjoying 'the advantages of monopoly.'" This was called an "indefensibly oversimplified statement" which "well indicates the superficial character of the majority's analysis of the fundamental problems un-

derlying labor-management relations in this industry."

Finally, Messrs. Taft, Smith and Nixon challenged another statement of the majority which said that the Railway Labor Act "does not impose even a moral obligation on the parties . . . to accept and act upon the recommendations of an emergency board." The minority thought that the legislative history of the act "would show most convincingly that labor, management, and the Congress felt at the time the act was framed that the principal value of the emergency board procedure lay in the moral force of the board's recommendations."

MacDonald to Take New Canadian Defense Post

Allan C. MacDonald—who is on loan from the position of executive assistant to the president of the Canadian Pacific—has been appointed, effective July 16, to the newly created post of deputy coordinator of the Production Branch of the Canadian Department of Defense Production, with headquarters at Ottawa. Since last March, Mr. MacDonald has been serving, on loan from the C. P., as director of the Shipbuilding Division of the Department of Defense Production.

He has been with the C. P. for 22 years, becoming executive assistant to the president in Februaryp 1947.

N.P.A. Sets Up M.R.O. Plan for Railroads

The National Production Authority on June 28 issued Order M-73 which set up special arrangements for the distribution of controlled materials to railroad transportation systems for maintenance, repair and operating supplies. Railroad M.R.O. allocations were previously covered by N.P.A.'s Regulation 4 which maintains the M.R.O. set-up applicable to industry generally.

M-73 supersedes Regulation 4 insofar as the latter has applied to railroad companies using more than $25,000 worth of M.R.O. materials in a quarter. As for the under-$25,000 companies, they get the option of operating under either order.

The new order applies not only to the railroads, but also to transit companies. "Approximately 450 transportation systems" are covered, according to the N.P.A. announcement.

Explaining why the special arrangements were established, the N.P.A. said: "These systems require items ranging from small clamps and washers to locomotives and fabricated bridge structures for maintenance-of-way. The varying nature of such operations makes it impossible to establish an inflexible formula permitting self-certification based on the 'historical use' pattern or any other formula. Thus, it is impossible to know what the requirements of controlled materials for each system may be without prior advice from each company."

Under the provisions of Order M-73, each road will list its quarterly M.R.O. requirements on a prescribed form, NPAF-105. The listings will cover the M.R.O. portion of the present freight-car program as well as requirements for the maintenance of fixed facilities.

N.P.A. suggested that the making of allotments would be "easier" if requirements for all types of work covered were consolidated into one report. The allotments will be "based on the availability of supplies and subject to program determinations by the Defense Production Administration," N.P.A. also said. It had previously noted that the principal controlled-materials item involved in the quarterly distribution will be about a million tons of carbon steel.

U.S. Chamber Committee Has Five Rail Members

Four railroad presidents and A. L. Hammell, president of the Railway Express Agency, are the "rail-carrier" representatives on the 1951-52 Transportation and Communications Committee of the Chamber of Commerce of the United States. The four railroad presidents are C. McD. Davis of the Atlantic Coast Line, who is also a member of the chamber's board of directors; John W. Barriger of the Chicago, Indianapolis & Louisville; L. C. Sprague of the Minneapolis & St. Louis; and R. L. Williams of the Chicago & North Western.

Evans A. Nash, who was the 1950-51 committee's chairman, continues in that capacity with the new committee. Mr. Nash, a transportation consultant of Oklahoma City, Okla., and a member of the chamber's board of directors, is one of the highway-carrier representatives on the committee.

The others are: R. A. L. Bogan, executive vice-president, Greyhound Corporation, Chicago; E. J. Buhner, president, Silver Fleet Motor Express, Louisville, Ky.; Walter F. Carey, president, Commercial Carriers, Detroit, Mich.; Charles P. Clark, vice-president, Columbia Terminals Company, St. Louis.

Water-carrier representatives are: L. L. French, vice-president, Union Barge Line Corporation, Pittsburgh, Pa.; W. B. Garner, executive vice-president, Waterman Steamship Corporation, Mobile, Ala.; James Sinclair, president and general manager, Luckenbach Steamship Company, New York; Walter M. Wells, president, Isthmian Steamship Company, New York; Charles L. Wheeler, executive vice-president, Pope & Talbot, San Francisco, Calif.

Freight forwarders are represented by M. Forgash, president, Universal Car Loading & Distributing Co., while the air-carrier representatives are J. H. Carmichael, president, Capital Airlines, Washington, D. C.; Robert J. Smith, president, Pioneer Air Lines, Dallas, Tex., and C. E. Woolman, president and general manager, Delta Air Lines, Atlanta, Ga.

Shipper representatives are: C. H. Beard, general traffic manager, Union Carbide & Carbon Corp.; F. L. DeGroat, general traffic manager, Joseph Schlitz Brewing Company; W. B. Shepherd, general traffic manager, Aluminum Company of America; Earl B. Smith, vice-president of traffic, General Mills.

The committee's members also include representatives of transit and communications interests, and these representatives of the "general public": C. W. Bader, president, Bader Corporation, Gary, Ind.; Andrew H. Brown, transportation commissioner, Cleveland (Ohio) Chamber of Commerce; R. L. Clark, president, Bodine & Clark, Portland, Ore.; T. M. Matson, director, Bureau of Highway Traffic, Yale University; Sidney L. Miller, professor of transportation, University of Pittsburgh.

The committee's membership was announced in a July 2 statement which said that the group "will guide the operations of the chamber's Transportation and Communication Department, as well as study and recommend policy." The announcement described the committee generally as one which "contains a balance of interests."

Chairman Nash was quoted as having said that one of the committee's "most important" tasks will be "the reexamination of chamber over-all policies in the domestic and international transportation fields." Special subcommittees will be appointed for these projects and will include representatives from outside the membership of the committee, "so as to do the best possible job," Mr. Nash added.

Report on Loss and Damage Still Before A.A.R. Board

The board of directors of the Association of American Railroads has again deferred action on the report and recommendations of the so-called Committee of Nine which investigated the association's activities in the field of loss and damage to freight. That was the outcome of the directors' further discussion of the report at their latest meeting, which was held in Washington, D. C., on June 29.

The directors had previously discussed the report when it was first placed before them at their previous meeting, held April 27. It was stated after the June 29 meeting that a number of board members who were "intensely" interested in the report were not on hand. Thus the decision to pass the matter over.

Meanwhile, the board had before it estimated loss and damage figures for this year's first four months. They showed an increase in claim payments of 1.6 per cent (from $30.1 million to $30.6 million) as compared with the first four months of 1950. But the ratio of payments to gross freight revenue was down—1.04 per cent as

compared with 1.25 per cent in the first third of 1950.

As noted in *Railway Age*, November 25, 1950, page 46, the studies of the Committee of Nine covered the organizational set-up of A.A.R. activities in the field of loss and damage, with particular reference to freight claim prevention and all related activities. The study was authorized by the A.A.R. board, and A.A.R. president William T. Faricy arranged with the regional presidents' conferences for appointment of the committee. Committee members include one operating officer, one accounting officer and one freight claim officer from each of the three regions. While its report has not been made public, the committee is understood to have recommended substantial changes in the present set-up.

Freight Car Loadings

Car loadings for the week ended June 30 were not available when this issue of *Railway Age* went to press.

Loadings of revenue freight for the week ended June 23 totaled 832,942 cars; the summary for that week, as compiled by the Car Service Division, A.A.R., follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, June 23

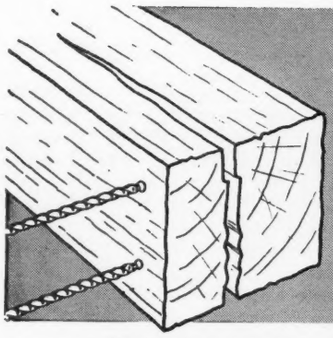
District	1951	1950	1949
Eastern	142,707	143,762	138,143
Allegheny	176,965	165,704	164,134
Pocahontas	66,573	58,908	64,571
Southern	129,484	121,814	114,129
Northwestern	134,456	131,140	132,579
Central Western	124,122	127,452	128,760
Southwestern	58,635	61,191	60,625
Total Western Districts	317,213	319,783	321,964
Total All Roads	832,942	809,971	802,941
Commodities:			
Grain and grain products	45,501	50,768	64,884
Livestock	6,852	7,612	6,827
Coal	154,873	145,306	171,510
Coke	16,854	15,068	12,158
Forest products	48,327	47,446	40,092
Ore	91,994	79,194	80,665
Merchandise l.c.l.	74,637	81,955	91,222
Miscellaneous	393,904	382,622	335,583
June 23	832,942	809,971	802,941
June 16	826,239	805,876	649,351
June 9	813,326	796,041	808,156
June 2	744,644	709,896	698,824
May 26	811,799	780,926	784,824
Cumulative total 25 weeks	19,095,789	17,101,230	18,092,900

In Canada.—Car loadings for the week ended June 23 totaled 84,721 cars, compared with 84,874 cars for the previous week and 82,191 cars for the corresponding week last year, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
June 23, 1951	84,721	33,799
June 24, 1950	82,191	33,682
Cumulative totals for Canada:		
June 23, 1951	1,963,497	890,758
June 24, 1950	1,794,463	766,577

May Employment

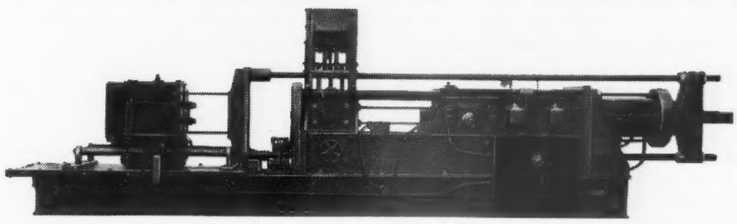
Railroad employment increased 0.39 per cent — from 1,286,195 to 1,291,172 — from mid-April to mid-May, and the mid-May total was 13.95 per cent above that of May 1950, accord-



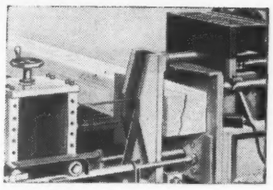
INCREASE TIE SERVICE LIFE

with GIANT GRIP DRIVE DOWELS and the Automatic GRAHAM

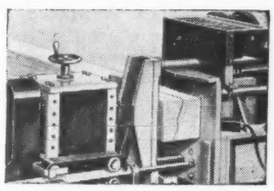
TIE DOWELLING MACHINE



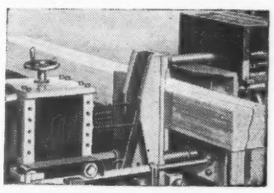
For fast, low cost dowelling of railroad ties—investigate the outstanding features and advantages of the modern Graham Tie Dowelling Machine. Furnished in Single or Double Units, this machine automatically drills and applies Giant Grip Drive Dowels into one or both ends of ties. Ties so protected pass through seasoning period, treatment, and road service, enjoying maximum security against end splitting, surface checking, and other causes contributing toward Infant Mortality—net result: maximum tie service life—reduced maintenance cost. Records of railroads now using these machines will convince you that this equipment will save you time, money and effort on all dowelling operations.



First Step—Ties are automatically fed into the machine, equalized for position and squeezed in the vise.



Second Step—Holes are automatically drilled slightly smaller than dowel size.



Third Step—Dowels are automatically screwed into tie by hydraulic pressure, completing operation. Tie is released and is then ejected by incoming tie.

Write today for Bulletin DM-1

GRAHAM TIE DOWEL SERVICE CO.

1201 HUNTINGTON BANK BUILDING · COLUMBUS, OHIO

MEET ANOTHER CENTENARIAN!—THE MISSOURI PACIFIC

Amid a great civic celebration, Mayor Luther M. Kennett of St. Louis poised a spade above the Missouri sod and then resolutely dug the first earth to be moved in construction of the Pacific Railroad. The time was July 4, 1851—just a little over two years after the Pacific had been chartered to extend "from St. Louis via Jefferson City to the western boundary of Missouri and thence to the Pacific ocean."

Although it was not until December of 1852 that the first four miles of the Pacific were actually opened for passenger service, in a physical sense, the Pacific—now but a portion of the nearly 10,000-mile Missouri Pacific system—is 100 years old this month, and that fact has been duly honored by the Missouri Historical Society at its 85th annual meeting held recently in St. Louis.

To commemorate the Mo. Pac.'s first century of existence, Dr. John Bakeless, biographer and historian, has been commissioned by the road to write its history and the part it played in the development of St. Louis, the West and the Southwest. Some of the highlights of his research were recounted at the historical society meeting, where Dr. Bakeless was introduced by Guy A. Thompson, trustee of the Missouri Pacific Lines.

The Pacific was the first railroad to be constructed and operated west of the Mississippi. James P. Kirkwood, builder of some of the early Massachusetts railroads and at one time in charge of operations of the New York & Erie (today's Erie), was selected as engineer in charge of construction. In the absence of any "standard" track gage at that time, Kirkwood, assuming that the Mississippi would never be bridged, selected the 5 feet 6 inches as most suitable for the Pacific's territorial conditions and for a long time that was standard for all roads within the state by action of the legislature.

Little was then known about much of Missouri's "interior" and Kirkwood's engineers had to run five survey lines to enable a proper choice of route. Rails were contracted for in England and were shipped—in the absence of any rail connection to the East—via New Orleans and river steamboats. Made of iron, these first rails came in 18-foot lengths and weighed 60 pounds per yd.

The first locomotive—appropriately named "Pacific"—reached St. Louis via the same roundabout route from Taunton, Mass., in August 1852. Although the company had other engines in service by December of that year, "Pacific" was called upon to pull the road's first passenger train from the 14th Street depot to a station near what is now known as Kingshighway near the west end of St. Louis.

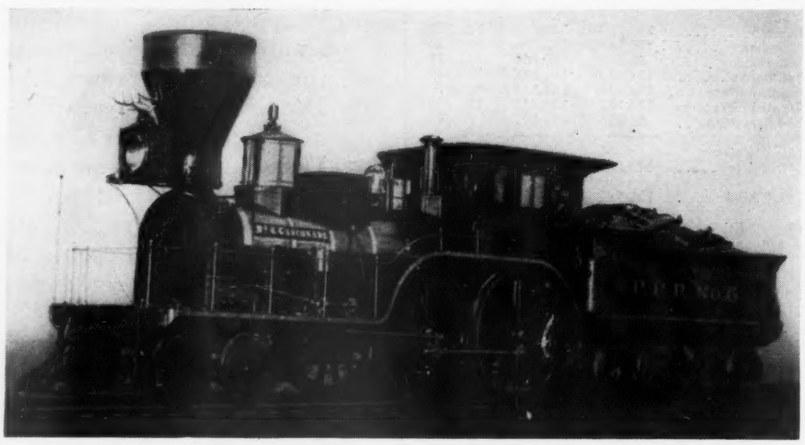
During the ensuing years of its first century, the M. P. has grown both by annexation and construction to a 10,000-mile rail network that serves an 11-state area almost one-third the size of the entire United States. Although in the hands of a trustee as the result of financial conditions that developed during the thirties, the Missouri Pacific has kept pace with current refinements in the art of railroading through application of diesel motive power, centralized traffic control, streamlined passenger trains and radio communications equipment.

ing to the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

The index of employment, based on the 1935-1939 average as 100, was 127 for May, compared with 128.1 for the previous month and 111.5 for May 1950.

May employment was below that of the previous month in five of the seven groups, the range of decreases being from 1.94 per cent in the transportation—other than train, engine, and yard—group to 0.02 per cent for the group embracing professional, clerical, and general employees. Increases for the other two groups amounted to 6.22 per cent for the maintenance of way and structures group and 0.38 per cent for the executives, officials, and staff assistants group.

As compared with May 1950, employment increased in all groups. The increases ranged from 21.67 per cent for the maintenance of equipment and stores group to 2.57 for executives, officials, and staff assistants.



PACIFIC RAILROAD NO. 6 (above) was almost identical to No. 3—"Pacific"—which reached St. Louis via river steamer in 1852 and pulled the first passenger train over the first four miles of completed line

WITH TODAY'S STREAMLINED "EAGLE" TRAINS (below) the Missouri Pacific offers dome cars and other travel refinements undreamed of by even the most far-sighted planners of the Pacific Railroad 100 years ago

ORGANIZATIONS

W. J. Brennan, general agent of the Reading at Cleveland, was recently elected president of the **Traffic Club of Cleveland.** Other officers elected are: First vice-president, L. E. Yost, assistant general traffic manager, Sherwin-Williams Company; second vice-president, Gordon F. Wilson, president, Wilson Motor Lines, Inc.;

secretary, John J. Jacobson, assistant transportation commissioner, Cleveland Chamber of Commerce; and treasurer, Wilfred H. Smith, general traffic manager, F. C. Russell Company.

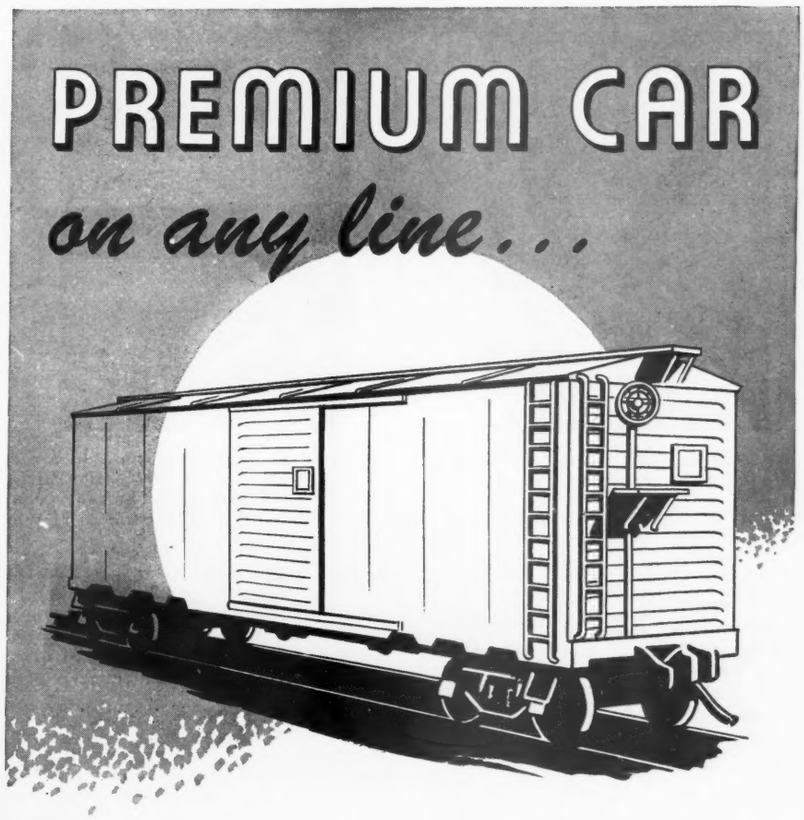
The **Buffalo Chapter** of the **National Railway Historical Society** will hold its next rail fan trip on August 5, via special train from Buffalo, over the Erie's freight-only line to Jamestown, N. Y., and along Lake Chautauqua. Tickets can be obtained from the trip secretary, Buffalo Chapter, N.R.H.S., 55 Meadow road, Buffalo 16.

Raymond B. Allen, president of the University of Washington, Seattle, has been elected a director of the **Transportation Association of America.**

SUPPLY TRADE

E. A. Frauenthal, above, who has been appointed assistant manager of the southwestern district of the Westinghouse Air Brake Company, with headquarters in St. Louis, and R. M. Beswick, below, who has been appointed assistant manager of the southeastern

district, with headquarters in Washington, D. C. Mr. Frauenthal joined the company in 1917 and has been representative in the southwestern district since 1932. Mr. Beswick joined the company in 1929 and has been Washington representative since 1947



Dednox-Insulated for Condensation Control

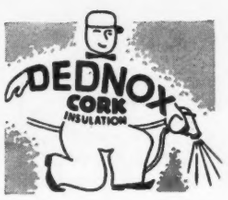
● This car, and 250,000 others like it, are saving modern railroads thousands of dollars in claims every year by preventing damage from water due to roof condensation. Dednox was developed at the request of many dissatisfied shippers, specifically for the purpose of insulating box car interiors... And many shippers who cannot get Dednox-insulated cars prefer to ship by other means, rather than chance impairment of lading in uninsulated cars.

Application of Dednox on contract jobs is continuously supervised by a Dednox inspector. No priming coat is needed. One application is sufficient—and lasts indefinitely. Dednox does not contain any water, having 2/3 less shrinkage than emulsion-type asphalts, and *over 10 times the amount of insulating cork content!*

Get full details on Dednox insulation to help cut damage claims and reduce car maintenance costs.

DEDNOX was the *first successful* car insulation. It is made from highest quality cutback asphalt, containing at least 60% by volume cork granules. Its K-Factor (heat transmission rate) is .36.

LISTED UNDER RECOGNITION SERVICE UL OF UNDERWRITERS LABORATORIES INC.



DEDNOX
INCORPORATED
7750 WEST 61ST PLACE
SUMMIT, ILLINOIS
(Chicago Suburb) POrtsmouth 7-7160

Allan K. Heaton, formerly assistant general freight agent for the Missouri Pacific, at St. Louis, has joined the General American-Evans Company, with headquarters at Detroit

Lawrence L. Garber, general manager of the American-Fort Pitt Spring division of the H. K. Porter Company, who has been elected a vice-president of the company

Rowland E. Dobbins, traffic manager of Northrup, King & Co. for the past five years, has resigned to join with **Donald R. Taylor** in forming the **Dobbins Taylor Company.** This company will maintain an industrial traffic consulting service for clients, and will also operate the Minne-Paul Shippers Association.

Stevens H. Hammond, president of the **Whiting Corporation,** Harvey, Ill., has been elected chairman of the board.

The **Spears Construction Company,** railroad contractor, has moved from 7875 Reading road, Cincinnati 37, to 2700 N.E. Ocean boulevard, Ft. Lauderdale, Fla.

The **Quaker Rubber Corporation,** division of the **H. K. Porter Company,** has opened a stock-carrying branch warehouse and sales office at 872 W. Milwaukee avenue, Detroit. **J. R. Alexander,** formerly Cleveland district manager, has been appointed district manager of the new branch, which will serve all of Michigan.

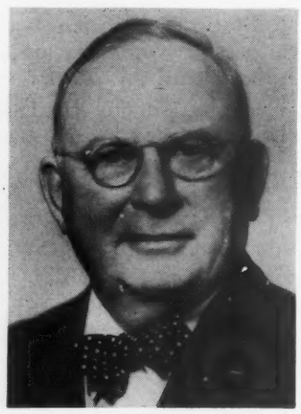
The **MacLean-Fogg Lock Nut Company** has announced the appointment of **Robert H. Waite**—formerly with the American Car & Foundry Co. in Chicago and New York—to its sales department in Chicago.

The **Buchanan Electrical Products Corporation** has moved to a new plant at 225 Highway 29, Hillside, N. J.

OBITUARY

Walter P. Allen, who retired in 1938 as eastern manager of the Union Switch & Signal Co., after 46 years of service in the railroad field, died on June 22. He was 82 years old.

Buyrl Wilson, general sales manager for the Double Seal Ring Company for the past eight years, who has been appointed vice-president in charge of sales



O. P. Rose, formerly sales engineer with the Primary Battery division of Thomas A. Edison, Inc., who has been appointed district manager at St. Louis, succeeding Bedford F. Hines, who has retired after 34 years of continuous service with the company

EQUIPMENT AND SUPPLIES

FREIGHT CARS

Army Purchases Two Unicel Cars

Officers of the U. S. Army Transportation Corps took delivery last week of two new Unicel freight cars which have just been purchased. Col. Emil Ringberg, A.T.C., said the army plans to move the new cars to Fort Eustis, near Norfolk, Va., for additional tests which will be made as soon as possible because of the nation's urgent defense transportation needs.

The Pressed Steel Car Company, builder and developer of the Unicel laminated plywood freight cars, turned over the cars at its Hegewisch, Ill., plant near Chicago.

Officers of the Pressed Steel Car Company, including Executive Vice-President W. F. Wilmas and Vice-President N. F. Garrett, and Bertrand Goldberg, of Atwood & Goldberg, the car's designer, were on hand to point out to the Army visitors special features of the car, which are said to include a saving of 11 tons of steel per box car, a 20 per cent saving in light car weight, and a 25 per cent increase in potential pay load. For a complete description of the car, see *Railway Age*, October 14, 1950, page 24.

A production line has just been put into operation at the Hegewisch plant, where manufacturing techniques and automatic processes are being developed which will speed production of the Unicel cars when quantity orders are in hand. The plant is now working on an order for 65 such cars for delivery to the Saudi-Arabian Government Railroad.

The results of official A.A.R. tests of the Unicel car, which are currently being made on the Chicago, Milwaukee, St. Paul & Pacific, are expected to be made known shortly.

The **Department of the Army** is purchasing 418 50-ton box cars from the Pullman-Standard Car Manufacturing Company on a negotiated contract basis. The fact that the Army was "in the market for about 400 cars" of the type now ordered was reported in last week's *Railway Age*.

The **Western Pacific** has been authorized to purchase 400 gondola cars and 100 hopper cars.

PASSENGER CARS

The self-propelled diesel rail car ordered by the **New York, New Haven & Hartford** from Mack Trucks, Inc. (*Railway Age*, July 2, page 78)

(*Continued on page 119*)

(Continued from page 116)
will be equipped with a Mack bus body, P.C.C. street car trucks and diesel-electric power. It will have a capacity of about 45 passengers—not 120, as first reports of the order had stated. The New Haven is also equipping 65 baggage cars for express messenger and baggageman service.

LOCOMOTIVES

The eight diesel-electric switching locomotives ordered from the Electro-Motive Division of General Motors Corporation by the **Baltimore & Ohio** for use on the **Baltimore & Ohio Chicago Terminal** (*Railway Age*, July 2, page 78) will be 1,200-hp. units.

The **New York, New Haven & Hartford** has ordered from the American Locomotive-General Electric Companies 10 1,600-hp. diesel-electric road-switchers and five 1,600-hp. diesel-electric road freight "B" units. Purchase of these locomotives, which are scheduled for delivery in November and December, is part of the New Haven's $14-million improvement program, reported in last week's *Railway Age*.

SIGNALING

The **New York Board of Transportation** has awarded a contract to the Union Switch & Signal Co. covering material for local track signaling and to signal the middle, or express, track for traffic in both directions on the Lenox-White Plains Road line. The order includes both outdoor and subway-type color-light signals, style A-10 electro-pneumatic switch machines, electro-pneumatic train stops, plug-in relays and code transmitters, rectifiers, transformers, housings and material to add controls to existing interlocking machines.

The **Toronto, Hamilton & Buffalo** has awarded to the General Railway Signal Company a contract for installation of centralized traffic control between Hamilton, Ont., and Welland, 39 miles. The control machine is to be located in the station building at Hamilton. The new signaling system is expected to be in operation within a year.

The **Wabash** has placed an order with the Union Switch & Signal Co. for material to install a remotely-controlled interlocking at Decatur, Ill. In addition to the style B-30 control machine, which will be installed at Brush College yard office, the order includes styles H-5 high and dwarf searchlight signals, M-23A dual-control electric switch machines, relays, rectifiers and transformers. Field installation will be handled by railroad forces.

CONSTRUCTION

T.R.R.A. to Build New $3 Million Mail Terminal

Work is scheduled to begin at once on a new mail terminal building for the Terminal Railroad Association of St. Louis. The entire project, which is estimated to cost $3 million, will be carried out under a general contract awarded to H. B. Deal & Co., from plans prepared by the T.R.R.A.'s chief engineer, Col. H. Austill.

Initial construction work will include a new building containing sorting platforms and auxiliary facilities to be built on the south side of Clark avenue at 17th street. This building will have an open shed over part of the 16th Street team yard and platforms between the tracks. It will be connected to the present Railway Express Agency building by belt conveyor bridges over 18th and Clark streets. Part of the express building will be remodeled and the entire present mail separating building will also be revised to include installation of some 8.000 feet of mail conveyor belts which will eliminate the prsent manual trucking system for handling "through" mail. The handling of mail on trucks around the ends of passenger trains in the terminal shed will also be eliminated when the new facilities are completed.

In making details of the project public, Armstrong Chinn, president of T.R.R.A., said the project was the biggest single undertaking by the association since the St. Louis World's Fair of 1904. He expected that mail would be greatly expedited—particularly "through" mail which constitutes 75 per cent of the total volume handled—when the new facilities are placed in service.

Alton & Southern.—Repairs to Fox Terminal wharf on the Mississippi river near East St. Louis, Ill., will be carried out under a contract with the Patton-Tully Transportation Company of Memphis, at a cost of a little more than $50,000.

Bessemer & Lake Erie.—Three stalls in the east end of this company's machine and erecting shop at Greenville, Pa., are being converted to diesel maintenance.

Chesapeake & Ohio.—This road has authorized the following projects at the indicated estimated costs: Relocating ditch and stabilizing roadbed at Haden, Va. ($23,400); tracks for mine development at Bradley, W. Va. ($44,000); installing electric elevator and stair tower in passenger station at Huntington, W. Va. ($43,000); relocating Williams creek and retiring two bridges at Grant, Ky. ($65,000); remote control of interlocking and signal facilities from Martin, Ky., to Beaver Jct. ($73,000); subdrainage in yard at Walbridge, Ohio ($47,000); remote control of interlocking and siding switches from yard office at Brighton, Ohio ($102,000); enginehouse improvements at Ottawa yard, Mich. ($100,000); ferry slip and yard at Sarnia, Ont. ($1,600,000); and extension to yard office and new steel warehouse at McGrew, Mich. ($250,000).

Chicago, Rock Island & Pacific.—A new classification yard will be built at Council Bluffs, Iowa, at a cost of $500.000. Scheduled for completion late in October of this year, the new yard will have 14 tracks of 127-car capacity each, to replace the present yard, in which tracks hold only 70 cars. The yard is expected to speed movement of east-west traffic, complementing the recently-completed Denver cut-off (*Railway Age*, February 26, page 45).

The road also has announced that, as soon as approval is obtained from the I.C.C., construction will begin on a new 33-mile line from the present main line at Atlantic, Iowa, to the new yard at Council Bluffs. This new direct line, when completed, is expected to permit cuts of 30 minutes in passenger and 90 minutes in freight schedules.

Denver & Rio Grande Western.—A new yard office for Ogden, Utah, has been authorized and company forces have begun work on the project, which is estimated to cost $25,800.

New York, New Haven & Hartford.—As part of its $14-million improvement program (*Railway Age*, July 2, page 78), this company plans to install new rail between Providence, R. I., and Worcester, Mass.; new automatic signals on its freight line to Maybrook, N. Y.; flasher signals and/or crossing gates at 12 highway grade crossings; and switch heaters at 484 switches and 19 derails. The program also includes work on the Silver Spring curve near Providence.

Southern.—The following projects have been authorized to be undertaken by company forces, at the indicated estimated costs: Filling trestle over double concrete box culvert at Asheville, N. C. ($174,000); installing centralized train control system from Burstall, Ala., to Meridian, Miss., approximately 140 miles ($740,000); construction of new passing track at Pinson, Ga. ($87.000); extension of passing track at McPherson, Ga. ($56,463); construction of new siding at Rockmart, Ga. ($70,859); installing two No. 20 crossovers and remote control at Austell, Ga. ($57.500); extension to passing track at Cohutta, Ga. ($26,534); and alterations to roundhouse for diesel repairs at Andrews yard, Columbia, S. C. ($26,890). This road also has awarded a contract for an estimated $210,000 to Bernard & Byrd, Inc., New Orleans, for construction of a yard office and communications tower in connection with extension and revision of Press Street yard, New Orleans.

Take a look at Strand

and you'll see why it's the finest flexible-shaft equipment made today

This particular machine is the new 4-speed Strandflex. No belts are used—a patented gear-drive assembly mounted on the motor permits quick, easy, positive speed change. Entire motor-drive unit, including even the starting switch, is completely enclosed to seal out dirt, dust and grit—and give you many *extra* years of trouble-free service.

The STRAND line of flexible-shaft tools – manufactured by the N. A. Strand Division of the Balmar Corporation, a wholly-owned Franklin subsidiary – includes, also, belt machines up to 3 hp. It provides a selection of portable, easily controlled, light-working-weight tools which can be used in tight places, on the bench or floor, for—*grinding—polishing—buffing – wire brushing – rotary filing – sanding—nut setting—screw driving.*

Remember—with STRAND the operator lifts the tool only — not the heavy motor.

Each of our offices has STRAND equipment available for demonstration at any time you suggest. If this is not practical, won't you write for one or more of the following:

Catalogue #31—Single-speed and three-speed countershaft types—⅓ to 3 hp
Bulletin #43 — Four-speed "Strandflex" gear type — ¼ to ½ hp
Bulletin #47 — Rotary files and cutters
Bulletin #48 — Wire brushes
Bulletin #49 — Abrasive and grinding attachments
Bulletin #50 — Buffing and rubbing attachments

REG. U.S. PAT. OFF.

FRANKLIN RAILWAY SUPPLY COMPANY

A CORPORATION

NEW YORK • CHICAGO • TULSA • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER
POWER REVERSE GEARS • FIRE DOORS • DRIVING BOX LUBRICATORS • OVERFIRE JETS
JOURNAL BOXES • FLEXIBLES JOINTS • TANK-CAR VALVE

RAILWAY DISTRIBUTOR FOR N.A. STRAND FLEXIBLE SHAFT EQUIPMENT

FINANCIAL

New Securities

Applications have been filed with the I.C.C. by:

BIRMINGHAM SOUTHERN.—To issue a $2,500,000 note to its parent company, United States Steel Corporation, in evidence of a loan obtained to finance in part the acquisition of the following equipment:

	Description and Builder	Estimated Unit Cost
1	diesel-electric locomotive (American Locomotive Company)	$147,497
235	gondola cars (Pullman-Standard Car Manufacturing Company) ...	6,600
100	box cars (Pullman-Standard)	5,500
100	hopper cars (Tennessee Coal, Iron & Railroad Company)	6,000

The note would mature over a 10-year period in 20 semi-annual installments of $125,000 each, and it would bear interest at three per cent. As to the latter, the application said it was based on the market rate for equipment trust certificates.

CENTRAL OF NEW JERSEY—CENTRAL OF PENNSYLVANIA.—To assume liability jointly for $2,745,000 of series A equipment trust certificates to finance in part acquisition by the Pennsylvania company of 22 diesel-electric locomotives, including 13 1,600-hp. road-switchers to be acquired from the American Locomotive-General Electric Companies at an estimated unit cost of $192,596, and nine 1,200-hp. yard switchers to be acquired from the Electro-Motive Division of General Motors Corporation at $103,705 each. The application put the estimated total cost of the equipment at $3,437,093. The certificates would be dated August 1 and would mature in 15 annual installments of $183,000 each, beginning August 1, 1952. They would be sold on competitive bids, which would fix the interest rate.

CHESAPEAKE & OHIO.—To assume liability for $6,600,000 of equipment trust certificates to finance in part acquisition of equipment, listed below, which is expected to cost a total of about $8,287,070.

	Description and Builder	Estimated Unit Cost
8	4,500-hp. diesel-electric passenger locomotives (Electro-Motive Division, General Motors Corporation).....	$467,616
11	1,500-hp. diesel-electric road-switching locomotives (Electro-Motive) ..	156,248
9	1,200-hp. diesel-electric road-switching locomotives (Electro-Motive) ..	103,130
350	50-ton box cars (Pullman-Standard Car Manufacturing Company)	5,412

The certificates, dated August 1, would mature over a 15-year period in 30 semiannual installments of $220,000 each, beginning February 1, 1952. They would be sold on competitive bids, which would fix the interest rate.

TEXAS & PACIFIC.—To assume liability for $1,650,000 of series L equipment trust certificates to finance in part acquisition of eight diesel-electric locomotives from the Electro-Motive Division of General Motors Corporation, and 100 70-ton covered hopper cars from the American Car & Foundry Co. The application gave the unit cost of the cars as $8,449.70, while the eight locomotives include six 1,500-hp. road-switchers at $152,220 each, and two 2,250-hp. passenger locomotives at $237,603 each. Estimated total cost of the equipment was put at $2,233,496. The certificates, dated August 1, would mature in 10 annual installments of $165,000 each, beginning August 1, 1952. They would be sold on competitive bids, which would fix the interest rate.

Division 4 of the I.C.C. has **authorized:**

CHESAPEAKE WESTERN.—To issue $600,000 of first and refunding mortgage, 4 per cent bonds, due October 1, 2001. The new bonds will be exchanged at par for a like amount of outstanding first-mortgage, 4 per cent gold bonds which will mature October 1. All of the maturing bonds are owned by the road's president, D. W. Thomas, who also owns all of its capital stock.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—To assume liability for $1,005,000 of equipment trust certificates to finance in part the acquisition of 10 diesel-electric locomotives (*Railway Age* of May 28, page 72). The commission's report approved sale of the certificates, with a 3⅛ per cent interest rate, at 99.226 — the bid of R. W. Pressprich & Co. and three associates, which will make the average annual interest cost approximately 3.27 per cent. The certificates, dated July 1, will mature in 15 annual installments of $67,000 each, beginning July 1, 1952. The certificates were reoffered to the public at prices yielding from 2.45 to 3.2 per cent, according to maturity.

LAKE TERMINAL.—To issue four notes totaling $857,100 to its parent company, United States

Steel Corporation, to evidence loans made in connection with the acquisition of five diesel-electric locomotives and expenditures for fixed facilities. At the request of the applicant the commission deferred action on the original application's request for authority to issue a fifth note in the amount of $1,800,000 to finance the acquisition of 150 gondola cars and 150 hopper cars. The original schedule for delivery of these cars is not expected to be met.

SOUTHERN PACIFIC.—To assume liability for $10,500,000 of series FF equipment trust certificates to finance in part the acquisition of 14 diesel-electric locomotives and 950 freight cars (*Railway Age* of June 18, page 72). The commission's report approved sale of the certificates, with a 3⅛ per cent interest rate, at 99.1353 — the bid of Halsey, Stuart & Co. The certificates, dated July 1, will mature in 15 annual installments of $700,000 each, beginning July 1, 1952. The certificates were reoffered to the public at prices yielding from 2.4 to 3.2 per cent, according to maturity.

TEXAS & PACIFIC.—To assume liability for $5,500,000 of series K equipment trust certificates to finance in part acquisition of 19 diesel-electric locomotives and 250 freight cars (*Railway Age*, June 18, page 72). The commission's report approved sale of the certificates, with 2⅝ per cent interest rate, at 98.191—the bid of Salomon Bros. & Hutzler and three associates. The certificates, dated July 1, will mature in 10 annual installments of $550,000 each, beginning July 1, 1952. The certificates were reoffered to the public at prices yielding from 2.35 to 3 per cent, according to maturity.

Dividends Declared

Atchison, Topeka & Santa Fe.—$2, quarterly, payable September 1 to holders of record July 20.

Carolina, Clinchfield & Ohio.—$1.25, quarterly, payable July 20 to holders of record July 10.

Illinois Terminal.—20¢, quarterly, payable August 1 to holders of record July 10.

Lake Superior & Ishpeming.—25¢, quarterly, payable July 14 to holders of record July 2.

Norfolk & Western.—common, 75¢, quarterly, payable September 10 to holders of record August 8; 4% adjustment preferred, 25¢, quarterly, payable August 10 to holders of record July 11.

Pittsburgh, Cincinnati & St. Louis.—$2.50, semiannual, payable July 20 to holders of record July 10.

Richmond, Fredericksburg & Potomac.—common voting, 75¢, semiannual; common non-voting, 75¢, semiannual; dividend obligations, 75¢, semiannual; all payable July 6 to holders of record June 25.

Western New York & Pennsylvania.—common, $1.50, semiannual; 5% preferred, $1.25, semiannual; both payable July 2 to holders of record June 29.

Western Pacific.—75¢, quarterly, payable August 15 to holders of record August 1.

Security Price Averages

	July 3	Previous week	Last year
Average price of 20 representative railway stocks	49.50	50.08	39.12
Average price of 20 representative railway bonds	91.42	92.16	89.07

RAILWAY OFFICERS

EXECUTIVE

Patrick J. Mullaney, general traffic manager of the BOSTON & MAINE and the MAINE CENTRAL, has been appointed vice-president — traffic of both roads, with headquarters as before at Boston and Portland, Me., succeeding **John W. Rimmer,** who has retired at his own request. Mr. Mullaney was born at Somerville, Mass., on December 30, 1892, and entered railroad service with the B.&M. on February 23, 1910, as an office boy in the freight traffic department. He then served successively as chief clerk to the vice-president in charge of traffic,

Preferred power for concrete vibrators and a wide range of other road-building and maintenance equipment — the world's most widely used single-cylinder gasoline engines on machines, tools, appliances for industry, construction, railroads, oil fields, and on equipment for farm and home.

You buy with confidence when machines, tools, and appliances are powered by Briggs & Stratton — the recognized leader in single-cylinder, 4-cycle, air-cooled gasoline engines.

Briggs & Stratton Corporation,
Milwaukee 1, Wis., U. S. A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

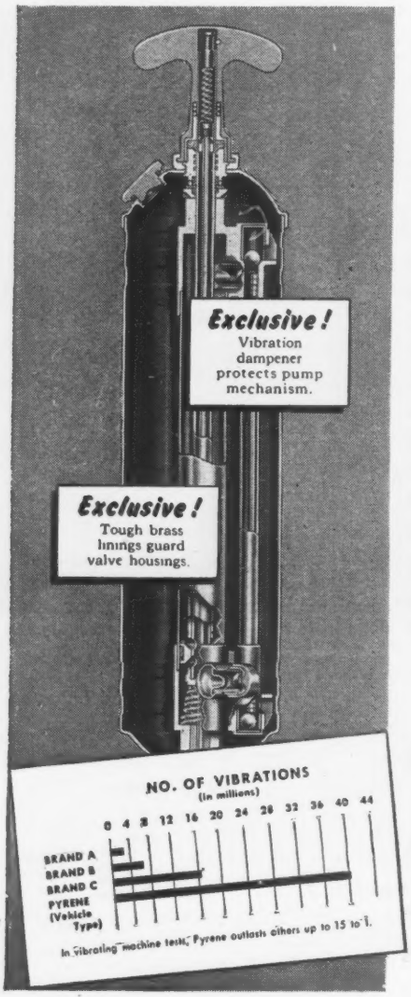
Wherever there's vibration... get

AT LEAST TWICE THE SERVICE LIFE

of ordinary vaporizing liquid extinguishers

with PYRENE

Vehicle Type Extinguishers


Exclusive!
Vibration dampener protects pump mechanism.
Exclusive!
Tough brass linings guard valve housings.
NO. OF VIBRATIONS
(In millions)
0 4 8 12 16 20 24 28 32 36 40 44
BRAND A
BRAND B
BRAND C
PYRENE (Vehicle Type)
In vibrating machine tests, Pyrene outlasts others up to 15 to 1.

Constant vibration can cut short the life of most vaporizing liquid fire extinguishers.

Not so with Pyrene* 1 qt. and 1½ qt. Vehicle Type Extinguishers. When subjected to vibration, they'll give at least twice the life of ordinary extinguishers.

A special vibration dampener holds the Pyrene pump mechanism firmly in place, protecting it against both vertical and horizontal vibration. And tough brass linings guard the valve housings in every spot where wear would occur. *No other extinguisher offers these vital added construction safeguards.*

In competitive vibrating-machine tests (the most rigorous of such tests known) a Pyrene Vehicle Type Extinguisher outlasted three other major brands by more than 2 to 1 . . . the ratio going as high as 15 to 1. (Chart shows details.) And there is not one single known instance of the Pyrene heavy-duty mechanism wearing out in actual operation.

Lower price doesn't pay when you get half the life! Buy on facts . . . buy Pyrene!

*T.M. Reg. U.S. Pat. Off.

Pyrene
REG. U.S. PAT. OFF.
FIRE EXTINGUISHERS

PYRENE MANUFACTURING COMPANY
678 Belmont Avenue • Newark 8, N.J.
Affiliated with C-O-Two Fire Equipment Co.

assistant general freight and passenger agent, assistant general freight agent in charge of off-line agencies, general freight agent, assistant freight traffic manager and freight traffic manager. In 1934 Mr. Mullaney's jurisdiction was extended to cover both the B. & M. and the Me. C. He was appointed general traffic manager of both roads on April 1, 1950. Mr. Mullaney is

Patrick J. Mullaney

vice-president for New England of the National Freight Traffic Association.

Mr. Rimmer was born at Brookline, N. H., on June 10, 1889, and entered railroad service in June 1907 as an office boy in the freight traffic department of the B.&M., advancing successively to clerk, secretary to freight traffic manager, traveling freight agent,

John W. Rimmer

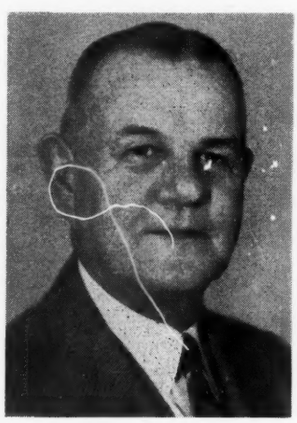
assistant general freight agent, assistant to vice-president, assistant freight traffic manager, freight traffic manager and general freight traffic manager. Mr. Rimmer was appointed vice-president—traffic of the B.&M. and the Me. C. on December 1, 1934. He is a director of the B.&M. Transportation Company, a former vice-president and director of the New England Traffic Club, and a former regional vice-president of the American Society of Traffic & Transportation.

Donald M. Lynn, assistant to vice-president in charge of real estate and industrial development of the ERIE, has been appointed assistant vice-president in charge of industrial development, with headquarters as before at Cleveland. A biography and photograph of Mr. Lynn were published in *Railway Age* July 22, 1950, page 61.

Clinton A. Veale, vice-president and general manager of the NORTHWESTERN PACIFIC, retired from active duty on July 1. He has been succeeded by **George L. Morrison,** who has been serving as assistant engineer,

Clinton A. Veale

maintenance of way and structures, for the Southern Pacific. Mr. Veale, whose retirement brings to a close a career of 48 years service with the N.W.P. and its parent, the S.P., started to work in the signal department of the S.P.'s Los Angeles and Tucson

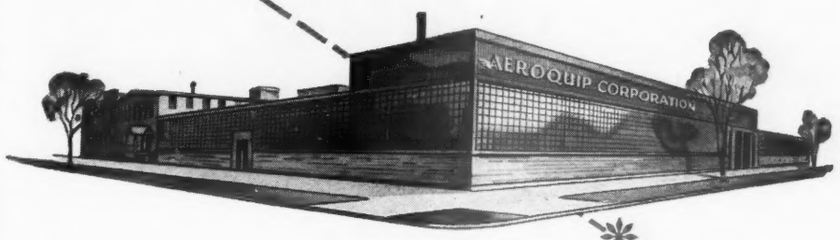


George L. Morrison

divisions before being transferred, in 1920, to the road's former East Bay interurban electric lines in San Francisco. He held a considerable number of supervisory positions on the interurban properties during the 18 years that followed. In 1942 he became an executive assistant in the S.P.'s general office in San Francisco—a position he held for three years before

Aeroquip

REG. TRADE MARK



DIDN'T

WAIT!

Today, when military and civilian demands for its products have doubled all previous records, Aeroquip announces the *completion* of a sizable expansion program. Two new structures and the acquisition of a new subsidiary have added more than 100,000 sq. ft. of highly productive space to Aeroquip's plant facilities.

It is not through mere chance that these important new additions are in operation *today*. More than a year ago the first warning signs that led to rearmament were recognized. Then, Aeroquip didn't wait for government prodding or financing, but with private capital and typical American initiative began a project which assures greatly increased production of vital Aeroquip products TODAY . . . *when they are of utmost importance.*

**In Jackson, Michigan, there is a new 65,000 sq. ft. addition to the Aeroquip main plant.*

***In Burbank, California, this modern 30,000 sq. ft. plant has just been completed.*

****Metalco, Inc., a new Aeroquip subsidiary, operates this plant in Cheboygan, Michigan.*

AEROQUIP CORPORATION

JACKSON, MICHIGAN

FLEXIBLE HOSE LINES • DETACHABLE, REUSABLE FITTINGS • SELF-SEALING COUPLINGS • BREAKAWAY COUPLINGS • HYDRAULISCOPE

Lord Mountings cushion road shock, reduce noise, protect the smooth functioning of equipment, reduce maintenance costs, add to the comfort and satisfaction of the traveling public.

When you plan new locomotives, new passenger cars, new auxiliary equipment be sure that Lord Mountings are in the drawings and the specifications . . . make them a part of design. No other expenditure you can make will bring as great returns from so small an outlay. Here are some of the places where Lord Mountings will serve you profitably:

- **Relay Panelboards**
- **Wheel-driven Generators**
- **Fans**
- **Vestibule Diaphragms**
- **Air Conditioning Units**
- **Power-driven Generators**
- **Signal Equipment**
- **Communication Equipment**

Write for your copy of the Lord Natural Frequency Chart and of the Vibration Isolation Chart. Designers and engineers will find them of definite value.

Although defense production is putting a heavy demand on our facilities, LORD will make every effort to supply industrial needs.

LORD MANUFACTURING COMPANY • ERIE, PA.

Canadian Representative, Railway & Power Engineering Corp. Ltd.

LORD BONDED RUBBER — Vibration-Control Mountings . . . Bonded-Rubber Parts

assuming the N.W.P. post from which he has just retired.

Mr. Morrison is a graduate of Rice Institute. His railroad career began in 1913 as a clerk for the S.P. in Houston, Tex. After holding a number of minor positions in different locations he transfererd to Los Angeles in 1922 as a rodman and advanced through engineering and operating positions to become assistant terminal superintendent in 1941. Subsequently he served as division engineer at Ogden, Utah, and Dunsmuir, Cal. He assumed his most recent position in 1945.

FINANCIAL, LEGAL & ACCOUNTING

W. L. Mitchell has been appointed assistant comptroller of the LEHIGH & NEW ENGLAND at Bethlehem, Pa., in addition to which he will continue as disbursement accountant. **F. E. Valkenburg** has been appointed auditor miscellaneous accounts at Bethlehem and will continue to assist the vice-president and comptroller as heretofore.

Charles E. Mekota, general claim agent of the CHICAGO, ROCK ISLAND & PACIFIC, has retired. He has been succeeded by **John J. Clifford,** former chief clerk. **George E. Johnson,** associated with the Rock Island since 1926, has been appointed to the newly-created position of assistant general claim agent, with headquarters at Chicago.

W. D. Steele, general claim agent for the ST. LOUIS-SAN FRANCISCO, has retired after 42 years of service. He has been succeeded by **M. O. Truitt,** former assistant general claim agent, who will be headquartered, as was Mr. Steele, at Springfield, Mo.

OPERATING

R. C. Bishop, terminal trainmaster of the CHESAPEAKE & OHIO at Walbridge, Ohio, has been appointed assistant superintendent of the NICHOLAS, FAYETTE & GREENBRIER, which is jointly operated by the New York Central and the C. & O., at Rainelle, W. Va., succeeding **J. M. Raine,** retired.

J. M. Perry, yardmaster of the ATLANTIC COAST LINE at Dothan, Ala., has been appointed terminal trainmaster at Waycross, Ga.

Alfred James, Jr., former trainmaster of the Cincinnati division of the LOUISVILLE & NASHVILLE, has been named assistant superintendent of the Louisville division, at Louisville.

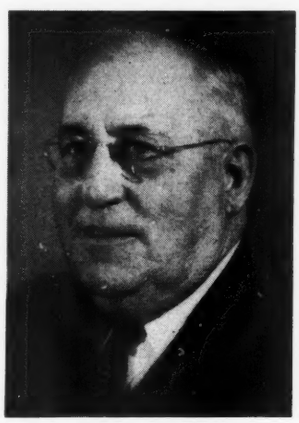
R. W. Parker has been appointed director of terminals and freight train classification of the MISSOURI PACIFIC LINES, at St. Louis. He succeeds **M. L. Smith,** whose promotion to superintendent of the Eastern division is reported elsewhere in this issue. **V. R. Adkins,** in turn, is appointed

assistant superintendent of the St. Louis Terminal division (east side of Mississippi river) with headquarters at Dupo, Ill., succeeding Mr. Parker.

C. A. Fink, general manager of the MISSOURI PACIFIC's Southern district, at St. Louis, will transfer his headquarters to Little Rock, Ark.

Charles F. Dougherty, former superintendent of the Eastern division of the MISSOURI PACIFIC at Kansas City, Mo., has been appointed general manager of the road's Western district, succeeding the late **Clyde W. Pace.** In his former position, Mr. Dougherty is succeeded by **M. L. Smith,** former director of terminals and freight train classification. Mr. Dougherty will establish headquarters in Kansas City—a move designed to bring the district general manager directly into the center of the territory for which he is responsible.

Mr. Dougherty was born in Winfield, Kan., in 1889 and began his career with the M.P. in the Coffeyville roundhouse in 1905. Until World War I he held a variety of positions at different points on the system. In military service he rose from second lieutenant to major while stationed in

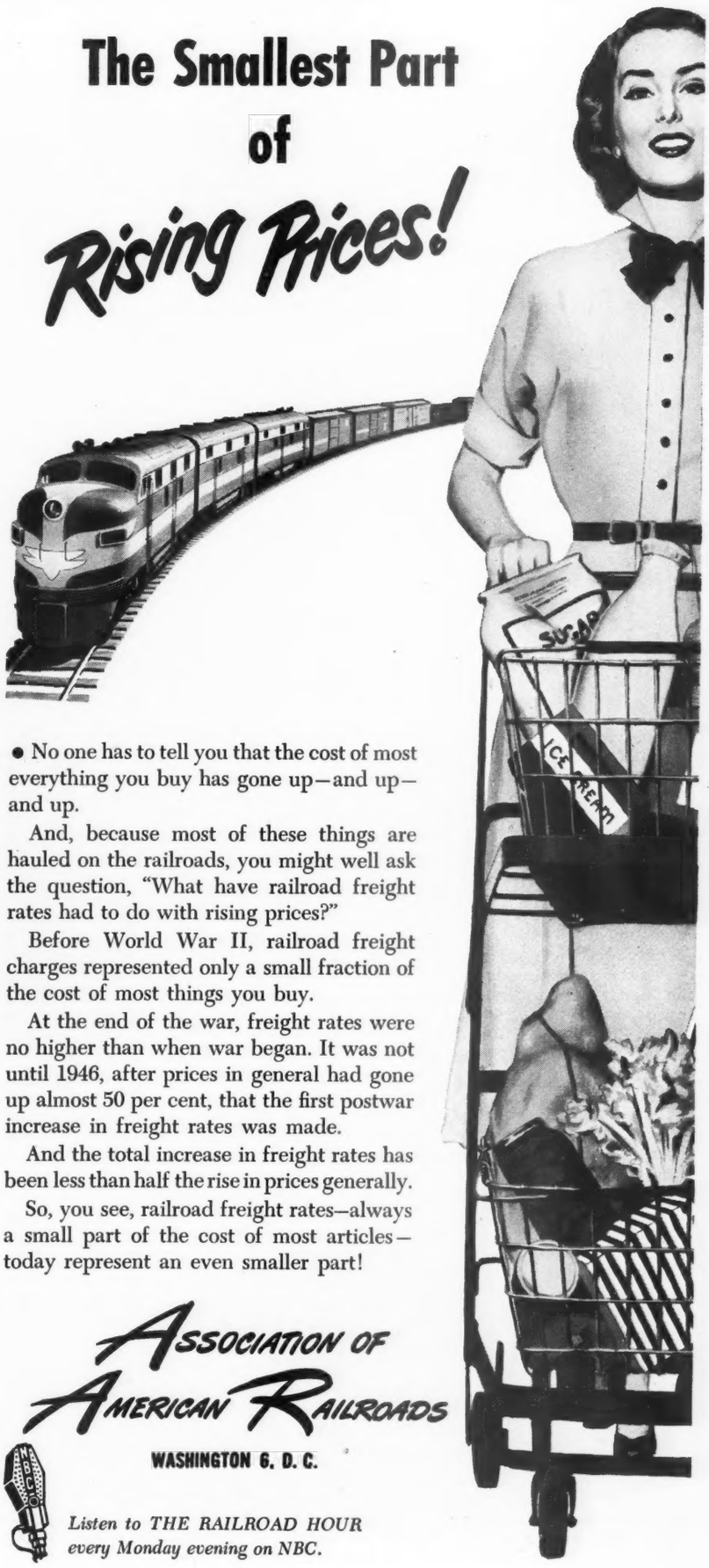


Charles F. Dougherty

Paris, France, as chief of rail and water transport service. Resuming his work with the M.P., he subsequently served at Van Buren, Ark., and Little Rock, and later as yardmaster, trainmaster and assistant superintendent. In October 1929 he was appointed superintendent of the Little Rock and Louisiana divisions at Monroe, La., and later was transferred to Poplar Bluff, Mo., as superintendent of the Missouri and Memphis divisions. In September 1940 he was transferred to Kansas City as superintendent of the Eastern division. Returning to active military duty in March 1942 he rose to the rank of colonel while serving in the African and European theaters. Upon conclusion of hostilities he returned to the railroad and the same position he had formerly held in Kansas City.

Mr. Smith was born at Alexandria,

The Smallest Part of Rising Prices!



• No one has to tell you that the cost of most everything you buy has gone up—and up—and up.

And, because most of these things are hauled on the railroads, you might well ask the question, "What have railroad freight rates had to do with rising prices?"

Before World War II, railroad freight charges represented only a small fraction of the cost of most things you buy.

At the end of the war, freight rates were no higher than when war began. It was not until 1946, after prices in general had gone up almost 50 per cent, that the first postwar increase in freight rates was made.

And the total increase in freight rates has been less than half the rise in prices generally.

So, you see, railroad freight rates—always a small part of the cost of most articles—today represent an even smaller part!

ASSOCIATION OF AMERICAN RAILROADS

WASHINGTON 6, D. C.

Listen to THE RAILROAD HOUR every Monday evening on NBC.

fishin' is fun . . . with care on the run

Here's a fellow that enjoys complete relaxation. He knows his rolling stock, maintenance-of-way equipment, repair facilities and storage areas are safeguarded from costly fires. No chance of a raging fire upsetting schedules, creating lost good will, reducing revenue or causing expensive delayed replacements, thanks to efficient, quick-acting C-O-TWO Railroad Fire Protection Equipment.

Diesel locomotives, whether under construction or already on the line, can be made firesafe with moderr approved C-O-TWO Railroad Fire Protection Equipment. There are thermostat fire alarm systems, smoke detecting systems, built-in carbon dioxide type fire extinguishing systems, carbon dioxide type hose rack fire extinguishing units, foam and water type fire extinguishing systems, carbon dioxide type hand portable fire extinguishers and dry chemical type hand portable fire extinguishers, all working together to render highly effective fire protection for diesel locomotives . . . inside . . . outside . . . underneath . . . all designed and engineered to meet your particular requirements.

Also, there are many other railroad properties, especially electric switch gear rooms, fuel oil pump rooms, locomotive terminals, repair shops, signal towers, store rooms and passenger station electric stairways, that need up-to-date C-O-TWO Railroad Fire Protection Equipment. Furthermore, passenger cars and dining-car kitchens are more and more being fitted with durable, easy-to-use C-O-TWO Hand Portable Fire Extinguishers . . . either carbon dioxide type or dry chemical type.

So, whatever your fire hazard problem, let an expert C-O-TWO Railroad Fire Protection Engineer help you now in planning economical, fully approved fire protection facilities. Write today for complete free information!

C-O-TWO

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

La., in 1904 and entered railroad service with the M.P. in 1921 as secretary to the assistant general freight agent at that point. After serving in various capacities at North Little Rock and McGehee, he was appointed assistant superintendent of the St. Louis Terminal division. On April 12, 1948, he was appointed director of terminals and freight classification at St. Louis.

B. A. Marks, superintendent of the Jacksonville division of the RAILWAY EXPRESS AGENCY, has been transferred to the Florida division at Jacksonville, succeeding **R. K. Smith,** who has retired after 47 years of service.

Henry Chester, assistant to the general superintendent of transportation of the CANADIAN PACIFIC at Montreal, has been appointed superintendent of transportation of the Prairie and Pacific regions at Winnipeg, succeeding **A. B. Burpee,** who will retire on August 1 after more than 50 years of service.

TRAFFIC

In connection with the appointment of **Robert A. Trovillion** as assistant vice-president (reported in *Railway Age* of July 2), the following changes in traffic department personnel of the ILLINOIS CENTRAL have been made effective. **Oscar L. Grisamore,** former general freight traffic manager, has become general traffic manager, succeeding Mr. Trovillion. **Ernest J. Carr** has succeeded Mr. Grisamore. **Howard S. Powell** has been named freight traffic manager with jurisdiction over rates, divisions, interstate commerce work and related matters. **Norman E. White** and **Leon Godehaux** have been appointed assistant freight traffic managers, and **Robert M. Kappel** and **C. Acree Pace** have been appointed assistant general freight agents—all with headquarters at Chicago. **Elias Lyman, Jr.,** has been appointed general commerce agent to succeed Mr. Pace. **Charles R. Reynolds** has been appointed

Oscar L. Grisamore

general freight agent at Atlanta, Ga.; **David B. Sweeney** and **Walter M. Bowling** have been named assistant coal traffic managers at Chicago, and **Roy W. Tierney** has been made general freight agent at Chicago.

Mr. Grisamore was born near Neoga, Ill., and joined the I.C. in 1911 at Champaign, Ill., in the operating department. In 1917 he was transferred to the freight rate section of the traffic department at Chicago. During World War I he served in the U. S.

Ernest J. Carr

Marine Corps. Following this service he returned to the I.C. and held a variety of clerical and traveling positions at Chicago and elsewhere. all in the traffic department, until March 1925, when he was named chief clerk in the sales and service general office at Chicago. He was appointed assistant general freight agent in July 1928, handling assignments involving rate work, sales and service and traffic research. During World War II, Mr. Grisamore held the position of general

Howard S. Powell

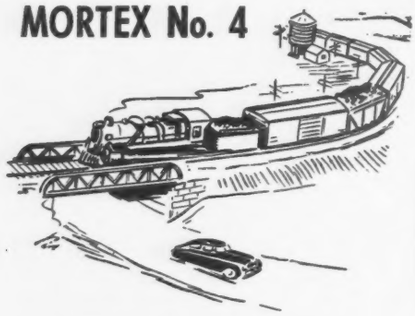
freight agent at Washington, D. C., until August 1944, when he returned to Chicago as freight traffic manager. In 1947 he was appointed general freight traffic manager.

Mr. Carr was born in Chicago in 1896 and began his I.C. career at the age of 16 as an office boy. After advancing through a number of clerical positions he was promoted, in July 1925, to secretary to President Charles H. Markham. Mr. Carr entered the traffic department in 1931 as chief clerk, and later became office manager to the vice-president. In 1936, Mr. Carr was promoted to general traffic agent at Omaha, and one year later was advanced to a similar post at Birmingham. His promotion to assistant traffic manager at St. Louis followed in 1939. It was in 1945 that he received promotion to general eastern traffic manager at New York — the position which he has just vacated.

Mr. Powell is a native of Hazelwood, Ky. After attending the Universities of Georgia and Arkansas, he began his railroad career with the Rock Island as a rate clerk in the general freight office at Little Rock. In July 1926 he came to the I.C. as a rate expert at Memphis; in 1932 he was promoted to chief clerk at New Orleans, and in February 1934 became chief of the divisions bureau at Chicago. Subsequently he held the positions of chief commerce agent (August 1941), assistant general freight agent (June 1942) and general freight agent (April 1948). He assumed the post of assis-

THESE ROADS and OTHERS
ARE Saving
With "The Railroad Boiler"
A steadily increasing number of roads, both large and small, are using the completely automatic AMESTEAM GENERATOR. This modern compact steam producer requires no boiler room labor and provides very high oil burning efficiency, evaporating 15¾ pounds of water on 1 pound of fuel, using No. 6 oil, providing 85% thermal efficiency.
Single units from 10 to 500 h.p. Higher horsepower available. Suitable for multiple installations. Delivered complete ready for service connections. Phone, write or wire.
Engineering, Sales and Service
RAILROAD SUPPLY and EQUIPMENT, Inc.
148 Adams Ave. Scranton 3, Pa.
Phone Scranton 7-3391
NEW YORK CENTRAL SYSTEM
Reading Lines
PRR
ATLANTIC COAST LINE
"THE CLINCHFIELD ROUTE"
GM&O
ERIE
PITTSBURGH & LAKE ERIE RAILROAD
RAILWAY EXPRESS AGENCY
B&O
C&O
SEABOARD RAILWAY
L&N
AMESTEAM GENERATOR
"The Railroad Boiler"
PRODUCT OF AMES IRON WORKS
OSWEGO, N. Y.

CONSERVE
ROLLING STOCK, YARD and Right-of Way EQUIPMENT with MORTEX No. 4



- Protects against rain and moisture
- Protects against salt brine
- Protects against acid and alkali fumes
- Odorless
- Non-toxic
- Vermin-proof

One application of this tested coating is far superior to paints and cut-back asphalt products. Its the most practical low-cost rust preventive for roofs, interiors and underframes of steel freight and refrigerator cars, covered hopper cars used for soda ash, lime and similar products, ice bunkers and equipment exposed to acid fumes and gases.

Its' tops for steel bridges, cooling system ducts and sumps, outside storage tanks, tool houses and bins.

Will not run, sag, blister or craze at temperatures up to 250° F.

EASY TO APPLY

Mortex No. 4 can be put on with brush, trowel or spray. It adheres to any clean dry surface and forms a rich, dull black finish.

TRY IT YOURSELF

Most railroads get Mortex No. 4 in 55 gallon drums, but you can order either a 1-gallon or a 5-gallon can and put it through your own comparative tests.

Write for literature

J. W. MORTELL CO.
Technical Coatings since 1895
563 Burch St., Kankakee, Ill.

tant freight traffic manager — from which he has now been promoted—in February 1950.

Mr. White was born in Springfield, Ill., and, after attending the University of Illinois, served with the I.C. in a number of stenographic and secretarial positions. In February 1933 Mr. White was given statistical duties in the office of vice-president at Chicago. Returning to the rate department in February 1935, he advanced through the positions of rate expert and commerce agent to become general commerce agent in December 1945. One year later he was named office manager in the rate department. Subsequently he was appointed office manager to the vice-president, assistant general freight agent, and general freight agent in August 1946, June 1947 and February 1950, respectively.

Mr. Godchaux is a native of New Orleans. He attended Louisiana State University, and, following service in the U.S. Naval Air Force during World War I, began his railroad career as a clerk in the I.C.'s general freight office at Memphis. He was appointed chief clerk at that point in 1926 and three years later was transferred to Chicago, where he later became office manager in the sales and service department in February 1934. In November 1936 Mr. Godchaux was appointed assistant general freight agent, later advancing to assistant to the freight traffic manager. He was appointed general freight agent on August 1, 1944.

Mr. Kappel was born in Albert Lea, Minn., and is a graduate of the University of Minnesota's school of business administration. He began his Illinois Central career on October 1, 1936, as an apprentice in the general freight office and subsequently advanced through a number of rate positions to his most recent post of coal commerce agent, which he assumed on September 1, 1946.

Edward T. Butler, Jr., and **Henry J. Hart,** industrial agents of the ERIE at Cleveland and New York, respectively, have been appointed industrial commissioners, with the same headquarters. **Robert W. Scheuch** has been appointed industrial agent at New York.

William H. Gardner, officers' assistant of the SOUTHERN, has been promoted to assistant to freight traffic manager, with headquarters as before at Washington, D. C., succeeding **J. Herbert Hayghe,** who has been promoted with the same title as heretofore.

M. A. Hutson has been appointed assistant general freight and passenger agent for the MISSOURI-KANSAS-TEXAS at Tulsa, Okla., succeeding **D. R. Miller,** who has been furloughed to accept a temporary position elsewhere.

E. B. Lawrence, assistant freight traffic manager of the ATLANTIC COAST LINE, has been appointed Florida freight traffic manager, with headquarters as before at Jacksonville. **Charles H. Battle, J. O. Adams** and **P. J. Lee,** assistant general freight agents at Miami, Orlando and Tampa, respectively, have been appointed assistant freight traffic managers, with the same headquarters. **Pinckney L. Harper,** commercial agent, has been promoted to general agent, with headquarters as before at Jacksonville, replacing **Horace Emerson,** who has been recalled to active duty in the United States Army.

Mr. Lawrence entered the service of the A.C.L. on November 5, 1909, in the freight office at Richmond, Va., and subsequently served as soliciting freight agent, chief clerk and commercial agent, superintendent of mine service, assistant to freight traffic manager and general eastern freight agent. On June 15, 1940, Mr. Lawrence became assistant freight traffic manager at Jacksonville.

Mr. Battle was born at Camilla, Ga., and was employed by the Atlanta Terminals, the Atlanta & West Point, the Georgia and the Louisville & Nashville prior to joining the A.C.L. on November 1, 1937, as commercial agent at Atlanta. On September 22, 1942, he was promoted to assistant general freight agent at Miami.

Mr. Adams, a native of Gordon, Ala., entered the service of the A.C.L. as a clerk at the Abbeville, Ala., freight office in January 1916. Since that time he has held various positions, including freight agent, commercial agent, and general agent. In June 1942 he was appointed assistant general freight agent at Orlando.

MECHANICAL

O. L. Hope, mechanical superintendent of the Southern district of the MISSOURI PACIFIC, will transfer his headquarters from St. Louis to Little Rock, Ark.

W. R. Sugg, mechanical superintendent of the Western district of the MISSOURI PACIFIC, will transfer his headquarters from St. Louis to Kansas City "to consolidate full staff operations in the headquarters of the new district general manager." (See announcement regarding **C. F. Dougherty** in the "Operating" column of this issue.)

Chester K. James, assistant superintendent of motive power of the ERIE, has been promoted to superintendent of motive power, with headquarters as before at Cleveland, succeeding the late **W. A. Carlson,** whose death was reported in *Railway Age* June 25. **William G. Carlson,** Eastern district master mechanic at Jersey City, N. J., has been appointed assistant superintendent of motive power at Cleveland. **George E. Lund,** Western district master mechanic at Meadville,

Pa., has been appointed assistant to the superintendent of motive power at Cleveland. The positions of district master mechanic have been abolished.

Mr. James was born at Huntington, Ind., on October 16, 1901, and joined the Erie in 1924, following his graduation as a mechanical engineer from Cornell University. He served successively as special apprentice at Meadville, leading machinist, backshop foreman, roundhouse foreman,

Chester K. James

motor equipment inspector and master mechanic. Mr. James was appointed district master mechanic at Meadville in 1944 and became assistant superintendent of motive power at Cleveland in 1946.

William G. Carlson joined the Erie in 1938 as a carpenter helper, following study in mechanical engineering at Purdue University and business administration at Allegheny College. From 1939 to 1943 he worked as an apprentice in the locomotive shops in Meadville and Susquehanna, Pa., until his appointment as machinist. From 1944 to 1946 Mr. Carlson was in military service. Following return to civilian life, he worked as general foreman of roundhouses at Dayton, Ohio, Buffalo, N. Y., and Hornell, and became master mechanic at Hornell in 1950. He was promoted to Eastern district master mechanic on May 1.

B. L. Thompson, superintendent motive power and car equipment of the Western region of the CANADIAN NATIONAL at Winnipeg, has been appointed general superintendent of motive power and car equipment of the Atlantic region at Moncton, N. B., succeeding **Eric Wynne,** who has been transfererd to the Western region at Winnipeg. Mr. Wynne replaces **Allan Beardshaw,** who has retired after 40 years of service with the company.

ENGINEERING AND SIGNALING

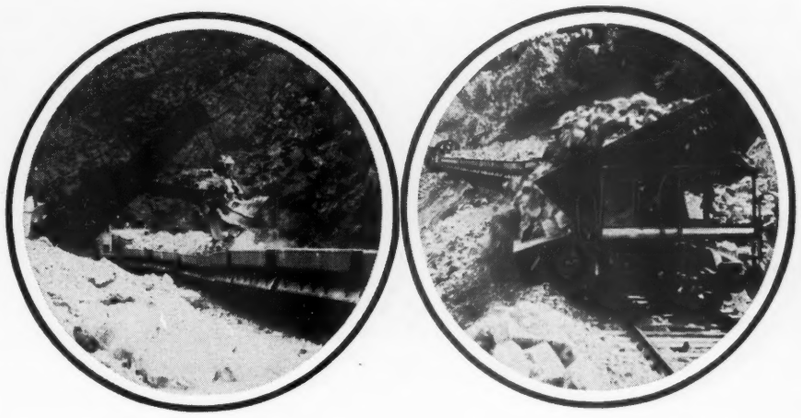
C. J. Jaeschke has been transferred as division engineer to the MISSOURI PACIFIC's Wichita division, succeeding **R. M. Smith,** who has been transferred in the same capacity to the position formerly held by Mr. Jaeschke at Fall City, Neb. (Omaha-Northern Kansas divisions).

Leonard E. Bates, engineer maintenance of way of the ATLANTIC COAST LINE at Jacksonville, Fla., has been appointed assistant to chief engineer at Wilmington, N. C. **A. V. Hooks,** assistant engineer maintenance of way of the Southern division at Jacksonville, succeeds Mr. Bates as engineer maintenance of way there. Mr. Bates, a native of Waycross, Ga., attended the Georgia School of Technology. He entered the service of the A.C.L. as a rodman at Waycross on September 1, 1925, and subsequently served as assistant engineer and junior engineer. He was named senior assistant engineer at Savannah, Ga., in 1940 and appointed division engineer at Wilmington in December 1944. Two years later he became roadmaster and in March 1947 was appointed engineer maintenance of way at Jacksonville.

OBITUARY

James P. Leach, assistant vice-president of the PULLMAN COMPANY, died in Chicago on June 27.

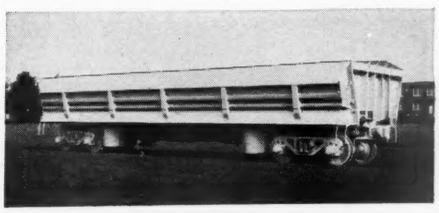
Yes, you're seeing DOUBLE



In fact, when you watch Differential Air Dump Cars in action you're seeing double in several respects —

DOUBLE ACTION — they dump cars both ways, to left or to right. The 50° dumping angle assures a clean dump, and the massive air cylinders (two on each side) assure speedy, reliable dumping power. The double trunnion, double fulcrum design are key features in Differential's amazing performance.

DOUBLE UTILITY — Good for hauling in ore and good for hauling out waste materials. Car is built to withstand abuse and heavy service. If you haul as many as 400 to 500 carloads yearly, the savings with Differential equipment will pay for the cars.



Differential Products Include: Air Dump Cars, Locomotives, Mine Cars, Mine Supply Cars, Rock Larries, Mantrip Cars, Dumping Devices and Complete Haulage Systems

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO

SINCE 1915 — PIONEERS IN HAULAGE EQUIPMENT

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM RAILWAYS

Compiled from 127 monthly reports of revenues and expenses representing 131 Class I steam railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF MARCH 1951 AND 1950

Item	United States		Eastern District		Southern District		Western District	
	1951	1950	1951	1950	1951	1950	1951	1950
Miles of road operated at close of month	226,024	226,612	53,303	53,373	45,960	46,147	126,761	127,092
Revenues:								
Freight	$741,001,035	$630,541,953	$278,068,706	$237,776,194	$157,871,930	$138,362,709	$305,060,399	$254,403,050
Passenger	70,569,252	59,555,366	35,223,105	31,689,305	12,482,859	10,373,549	22,863,288	17,492,512
Mail	22,269,096	18,835,410	9,176,237	7,050,648	3,556,749	3,203,211	9,536,110	8,581,551
Express	7,378,507	6,729,072	2,251,853	2,096,354	1,513,515	1,469,401	3,613,139	3,163,317
All other operating revenues	34,257,145	27,663,931	15,486,239	12,394,990	6,327,801	4,915,242	12,443,105	10,353,699
Railway operating revenues	875,475,035	743,325,732	340,206,140	291,007,491	181,752,854	158,324,112	353,516,041	293,994,129
Expenses:								
Maintenance of way and structures	117,834,183	98,409,755	41,145,049	33,330,494	27,515,190	22,217,180	49,173,944	42,862,081
Depreciation	11,113,535	10,767,268	4,588,944	4,507,771	2,066,257	1,904,817	4,458,334	4,354,680
Retirements	1,291,398	984,334	578,606	207,342	288,863	206,026	423,929	570,966
Deferred maintenance	*177,770	*327,400	*174,538	*290,242	*3,232	*2,958	.....	*34,200
Amortization of defense projects	140,875	147,415	12,592	14,742	32,571	46,258	95,712	86,415
Equalization	1,734,844	4,492,776	758,410	2,523,161	668,131	791,786	308,303	1,177,829
All other	103,731,301	82,345,362	35,381,035	26,367,720	24,462,600	19,271,251	43,887,666	36,706,391
Maintenance of equipment	170,720,467	139,202,620	71,403,435	58,068,248	33,739,030	26,855,763	65,578,002	54,278,609
Depreciation	25,361,995	24,153,043	9,393,721	8,976,689	5,703,996	5,353,146	10,264,278	9,823,208
Retirements	*433,194	*73,582	*414,540	*2,307	20,730	*51,571	*39,384	*19,704
Deferred maintenance and major repairs	*2,132,947	*3,385,106	*2,114,044	*3,368,499	*1,903	*6,223	*17,000	*10,384
Amortization of defense projects	4,264,360	1,223,610	692,655	451,490	649,818	238,498	2,921,887	533,622
Equalization	*637,506	*218,834	*13,468	19,204	344,809	243,012	*968,847	*481,050
All other	144,297,759	117,503,489	63,859,111	51,991,671	27,021,580	21,078,901	53,417,068	44,432,917
Traffic	17,498,674	16,184,938	5,876,273	5,489,234	3,740,748	3,351,233	7,881,653	7,344,471
Transportation—Rail line	338,183,205	289,136,300	144,095,742	124,833,559	62,413,455	54,749,102	131,674,008	109,553,639
Miscellaneous operations	10,167,113	8,689,469	3,583,641	3,318,354	1,733,684	1,477,957	4,849,788	3,893,158
General	25,258,736	22,785,194	9,636,356	8,723,630	5,494,820	4,947,453	10,127,560	9,114,111
Railway operating expenses...[1]	679,662,378	574,408,276	275,740,496	233,763,519	134,636,927	113,598,688	269,284,955	227,046,069
Net revenue from railway operations	195,812,657	168,917,456	64,465,644	57,243,972	47,115,927	44,725,424	84,231,086	66,948,060
Railway tax accruals	101,438,761	79,745,440	31,196,195	26,016,409	22,512,935	20,721,252	47,729,631	33,007,779
Pay-roll taxes	24,233,000	21,015,415	10,011,095	8,561,914	4,722,565	4,069,718	9,499,340	8,383,783
Federal income taxes†	48,249,173	31,567,026	10,703,853	7,592,821	11,610,282	10,734,974	25,935,038	13,239,231
All other taxes	28,956,588	27,162,999	10,481,247	9,861,674	6,180,088	5,916,560	12,295,253	11,384,765
Railway operating income	94,373,896	89,172,016	33,269,449	31,227,563	24,602,992	24,004,172	36,501,455	33,940,281
Equipment rents—Dr. balance	12,375,234	10,265,487	6,215,549	4,414,373	*212,453	*62,827	6,372,133	5,913,941
Joint facility rents—Dr. balance	3,735,860	3,144,214	1,824,138	1,475,629	464,242	505,645	1,447,480	1,162,940
Net railway operating income	78,262,802	75,762,315	25,229,762	25,337,561	24,351,203	23,561,354	28,681,837	26,863,400
Ratio of expenses to revenues (percent)	77.6	77.3	81.1	80.3	74.1	71.8	76.2	77.2

FOR THE THREE MONTHS ENDED WITH MARCH 1951 AND 1950

Item	United States		Eastern District		Southern District		Western District	
	1951	1950	1951	1950	1951	1950	1951	1950
Miles of road operated at close of month	226,044	226,634	53,306	53,373	45,959	46,147	126,779	127,114
Revenues:								
Freight	$2,050,893,826	$1,649,845,861	$761,739,655	$615,285,289	$443,659,639	$350,754,971	$845,494,532	$683,805,601
Passenger	212,563,317	187,125,907	106,759,269	99,865,453	37,352,754	32,240,670	68,451,294	55,019,784
Mail	59,181,027	52,735,982	23,139,826	19,490,873	9,806,722	9,150,477	26,234,479	24,094,632
Express	16,500,615	14,732,682	4,393,443	4,252,906	3,456,129	3,446,702	8,651,043	7,033,074
All other operating revenues	100,823,840	80,857,936	45,691,265	35,957,789	18,199,144	14,015,237	36,933,431	30,884,910
Railway operating revenues	2,439,962,625	1,985,298,368	941,723,458	774,852,310	512,474,388	409,608,057	985,764,779	801,838,001
Expenses:								
Maintenance of way and structures	329,601,393	274,948,271	117,325,316	94,396,573	77,237,732	63,123,810	135,038,345	117,427,888
Depreciation	33,314,549	32,290,843	13,770,593	13,509,085	6,176,608	5,766,567	13,367,348	13,015,191
Retirements	2,801,188	2,035,250	1,086,980	407,317	409,293	549,786	1,304,915	1,078,147
Deferred maintenance	*596,513	*652,837	*591,208	*529,424	*5,305	*18,713	.....	*104,700
Amortization of defense projects	441,801	461,366	39,263	57,869	102,963	139,095	299,575	264,402
Equalization	15,374,491	16,969,166	6,853,616	8,778,602	5,571,403	5,459,530	2,949,472	2,731,034
All other	278,265,877	223,844,483	96,166,072	72,173,124	64,982,770	51,227,545	117,117,035	100,443,814
Maintenance of equipment	479,956,790	391,423,078	201,492,939	159,280,519	94,809,210	76,716,215	183,654,641	155,426,344
Depreciation	75,865,301	72,262,447	27,444,573	26,791,609	17,121,812	16,226,399	31,298,916	29,244,439
Retirements	*875,357	*143,265	*446,813	*16,517	*321,085	*82,864	*107,459	*43,884
Deferred maintenance and major repairs	*6,768,882	*7,764,526	*6,686,526	*7,565,157	*6,799	*16,864	*75,557	*182,505
Amortization of defense projects	7,524,777	3,667,744	1,950,094	1,354,559	1,242,978	715,533	4,331,705	1,597,652
Equalization	*521,520	*397,027	*16,517	83,388	807,273	923,786	*1,312,276	*1,404,201
All other	404,732,471	323,797,705	179,248,128	138,632,637	75,965,031	58,950,225	149,519,312	126,214,843
Traffic	51,561,036	47,403,049	17,285,745	16,242,822	11,033,264	9,915,659	23,242,027	21,244,568
Transportation—Rail line	969,280,320	815,345,651	415,127,263	346,891,796	178,436,337	150,525,442	375,716,720	317,928,413
Miscellaneous operations	30,259,296	26,499,709	10,868,244	9,960,384	4,980,687	4,308,806	14,410,365	12,230,519
General	74,309,847	66,566,995	28,470,291	25,560,981	15,977,791	14,272,759	29,861,765	26,733,255
Railway operating expenses...[1]	1,934,968,682	1,622,186,753	790,569,798	652,333,075	382,475,021	318,862,691	761,923,863	650,990,987
Net revenue from railway operations	504,993,943	363,111,615	151,153,660	122,519,235	129,999,367	90,745,366	223,840,916	149,847,014
Railway tax accruals	282,272,068	199,317,385	85,439,927	67,309,561	69,881,146	46,190,040	126,950,995	85,817,784
Pay-roll taxes	69,309,099	60,605,383	28,731,107	24,621,394	13,421,865	11,542,716	27,156,127	24,441,273
Federal income taxes†	126,299,111	58,363,969	25,221,737	13,511,578	37,777,810	17,440,488	63,299,564	27,411,903
All other taxes	86,663,858	80,348,033	31,487,083	29,176,589	18,681,471	17,206,836	36,495,304	33,964,608
Railway operating income	222,721,875	163,794,230	65,713,733	55,209,674	60,118,221	44,555,326	96,889,921	64,029,230
Equipment rents—Dr. balance	36,777,743	30,639,449	18,364,035	12,867,256	*799,119	*392,294	19,212,827	18,164,487
Joint facility rent—Dr. balance	10,971,633	9,736,314	5,287,793	4,559,292	1,572,675	1,594,019	4,111,165	3,583,003
Net railway operating income	174,972,499	123,418,467	42,061,905	37,783,126	59,344,665	43,353,601	73,565,929	42,281,740
Ratio of expenses to revenues (percent)	79.3	81.7	83.9	84.2	74.6	77.8	77.3	81.3

†Includes income tax, surtax and excess profits tax.
*Decrease, deficit or other reverse item.
[1]Includes accruals for additional wage payments of $29,369,767.
Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.